CONVENTION NUMBER

Vol. III AUGUST No. 8

1914

The Journal of the American Pharmaceutical Association

PUBLISHED MONTHLY
BY THE ASSOCIATION
AT COLUMBUS OHIO

W. J. N.

—THE STONEMAN PRESS—

62nd ANNUAL CONVENTION, AUGUST 24-29, DETROIT, 1914

Specify MERCK'S

"ORIGINAL PACKAGES"

Contents for August, 1914

President George M. Beringer...Frontispiece
The Legislative Problems of Pharmacy—Beal 1051

SECTION ON HISTORICAL PHARMACY:—
The Tablet Industry (Concl'd)—Kebler 1062

CONTRIBUTED AND SELECTED:—
Pharmacopœia IX, The—Remington 1100
Bichloride Tablets and Legislation—Beringer 1111
Magnesia Magma—Heusel 1118
Urine Analysis—Mayer 1120
American Medical Association, Meeting of—Wilbert 1121
Address to Students, Coll. Phys. and Surgeons of San Francisco—Cadwallader 1125
Pennsylvania in the A. Ph. A.—Apple 1135
Organo-Therapy for Pharmacists—Zieg 1138
New Synthetics, The Popular Use of—Apple 1141

PRESIDENT BERINGER'S INVITATION 1143

EDITORIAL SECTION 1144
Time to Halt
Convention Dispatch of Business
Superstition in Medicine
To Every Member.—From the Local Committee.
Plan of A. Ph. A. Environment at Detroit (Illustrated.)
Facts of Interest About Detroit (Illustrated)
A Meeting of the Detroit Executive Committee (Illustrated)
Sectional Work at Detroit
Letters to Editor

BOOK REVIEWS 1157

SECTION ON COMMERCIAL PHARMACY:—
Tablets for External Use, Shape of—Raubenheimer 1158

SECTION ON PHARMACOPŒIAS AND FORMULARIES:—
Materia Medica Standardization, Some Objections to—Stewart 1161
The Pharmacopœia, The Druggist and the Physician—Needham 1167
Poison Laws, Need for Greater Uniformity in—Wilbert 1168

SECTION ON EDUCATION AND LEGISLATION:—
Suggestion or Two, A—Lindly 1173
Modern Medicine, The Trend of—Lyman 1175

COLLEGE AND SOCIETY 1179
THE PHARMACIST AND THE LAW 1184
COUNCIL BUSINESS 1186
U. S. PUBLIC HEALTH SERVICE 1195
A. PH. A. ROSTER 1197

THE MASSACHUSETTS COLLEGE OF PHARMACY

74 St. Botolph St., Corner of Garrison : BOSTON, MASS.

A College of Pharmacy, controlled and managed by pharmacists, in which the teaching is largely by the laboratory method. The possession of a liberal endowment makes it possible to give superior courses without increase of cost to the student.

Regular course of two years, leading to the degree of Graduate in Pharmacy (Ph. G.) Many students take three years to complete this course, working in drug stores while doing so. The College is generally able to secure positions with College privileges for such students.

Post-graduate course of one year, leading to the degree of Pharmaceutical Chemist, (Ph. C.)

The annual session begins during the latter part of September and ends during May.

A general education equivalent to the completion of one year in a high school, as shown by certificate or examination, is required for entrance.

For catalogue and further information, write to THEODORE J. BRADLEY, Ph. G., Dean.

SPECIAL ATTENTION.—Drug stores (snaps) for sale and trade in 48 states. Drug stores handled. Drug jobs in 48 states. Physicians, dentists, veterinarians, nurses furnished and located. Established 1904. Strictly reliable. Gilt edge references. Let me know your wants. F. V. KNIEST, R. P., Omaha, Nebr.

MARKED COPY

Rates and Routes to Convention

The Committee on Transportation of the American Pharmaceutical Association announce the following rates and routes for members attending the sixty-second annual convention to be held in *DETROIT, MICH., AUGUST* 24th-29th, 1914.

While no special reduction could be obtained from the transportation companies for those attending this meeting, summer excursion or tourists' rates will be in operation at that time in many sections and members are advised to avail themselves of these whenever possible.

From points where these excursion rates are not in operation, members are advised to purchase tickets to nearest tourist center and buy their excursion tickets from that point.

NEW YORK and *NEW ENGLAND;* all rail to Detroit. Arrangements have been made with the Walter H. Woods Co., 262 Washington St., Boston, Mass., for an 18-day tour by New York Central Lines to Detroit, and return by way of Toronto, Lake Ontario, Thousand Islands, St. Lawrence River, Quebec and Montreal, thence via Central Vermont or the D. & H. Co. lines to Boston and New York.

The price of above tour including railroad fares, Pullman, meals, rooms at Hotel Pontchartrain while in Detroit with bath (2 in room); railroad and steamer fares with meals on St. Lawrence River trip; five days' room and board at Murray Isle Hotel at Thousand Islands, rooms and meals at other hotels and cars *en route,* except meals while in Detroit,—New York and return 18 days, $123, basing on ten or more people; Boston and return 18 days $124, basing on fifteen or more people. Rate from Detroit, 11 days from date of departure to arrival in New York or Boston, $85. Descriptive circulars of this tour will be sent on application to Walter H. Woods Co., 262 Washington St., Boston, Mass. Train will leave South Station, Boston, August 22d, at 4:45 p. m., connecting in Albany, N. Y., at 9:40 p. m., with party from New York leaving the Grand Central Station at 6 p. m. This train will arrive in Detroit on Sunday, August 23d, at 1:30 p. m.

RAIL and *LAKE ROUTE* to *DETROIT* from *NEW YORK, PHILADELPHIA, BALTIMORE* and *WASHINGTON.* By Lehigh Valley Railroad and connections to Niagara Falls and Buffalo, thence by steamer of the Detroit and Cleveland Navigation Company to Detroit.

August 22d leave Washington by 3 p. m. train B. & O. R. R.

August 22d leave Baltimore by 3:48 p. m. train B. & O. R. R.

August 22d leave Philadelphia by 6:30 p. m. train P. & R. R. R. which will connect with the 6 p. m. train on Lehigh Valley Railroad from New York at South Bethlehem at 8:50 p. m., arriving at Niagara Falls 7:10 a. m. Sunday, August 23d; leave Niagara Falls on day coach 4:22 p. m. same day, arrive at Buffalo 5:25 p. m. Leave Buffalo on D. & C. Co's steamer at 6 p. m., arriving in Detroit on Monday, August 24th, at 7:30 a. m.

Single fares Washington to Detroit $14.63—parties of ten $12.45.

Single fares Baltimore to Detroit $13.63—parties of ten $11.70.

Single fares Philadelphia to Detroit $13.10—parties of ten $11.75.

Single fares New York to Detroit $12.00—parties of ten $10.95.

A charge of 50c is made for transfer of baggage from train to boat in Buffalo.

Members from Washington and Baltimore should secure Pullman berths *from Philadelphia* to Niagara Falls, lower berths $2.00, upper $1.60. Berth rates on boat, Buffalo to Detroit, lower $1.50, upper $1.00. State room containing single upper and double lower berth, $2.50, which can be secured from the railroad ticket agents.

Members from New York City who propose to take this route should write Mr. C. S. Wells, Passenger Agent Lehigh Valley R. R. Co., 1460 Broadway, New York, who will furnish tickets and make reservations on Pullman and boat.

CLEVELAND to *DETROIT*—Lake Route. The Detroit and Cleveland Navigation Company's boats recommended; leaves Cleveland daily at 11:45 p. m., eastern time, arrives in Detroit next morning.

Fare one way $2.00. Round trip $3.50. Round trip in parties of ten or more $3.00.

State rooms $2.50 each, single berths, lower $1.50, upper $1.00.

Those wishing to take a day-trip on Lake can leave Cleveland 8:30 a. m., eastern time, arrive at Put-in-Bay at 12:45, leave Put-in-Bay 3:30 p. m., arrive in Detroit 8 p. m. same day.

On return trip from Detroit by this route a stop over at Cedar Point, the Coney Island of the West, is recommended. Take boat for Cleveland about 4:30 p. m. same day.

From *CHICAGO* to *DETROIT* the regular fare of $5.50 each way prevails.

From *CINCINNATI*: Chicago, Hamilton & Dayton route is recommended; single fare to Detroit $5.25; no reduction for parties. Railroad can be taken to Toledo and thence by White Star Steamer to Detroit at same fare; Pullman and staterooms extra. Parlor car fare 75c; Pullman lower berth $2.00, upper $1.60.

From *MEMPHIS, CHATTANOOGA, NASHVILLE, KNOXVILLE, LOUISVILLE, FRANKFORT, LEXINGTON*—the following summer tourist rates to Detroit and return are in effect by the Louisville and Nashville Railroad, good returning until October 31st with liberal stop-over privileges:

Memphis $29.15 via either Chicago or Cincinnati.
Chattanooga $24.55 via Cincinnati only.
Nashville $22.75 via either Chicago or Cincinnati.
Knoxville $22.25 via Cincinnati only.
Louisville $15.25 via Cincinnati only.
Frankfort $15.25 via Cincinnati only.
Lexington $14.70 via Cincinnati only.
Pullman at regular rates.

From *ATLANTA*: Members from Southeast are advised to route via Louisville and Nashville, Atlanta to Cincinnati, C. H. & D. to Toledo, Pere Marquette Toledo to Detroit, or by White Star Steamer, Toledo to Detroit, as they may prefer. L. & N. schedules are as follows:

Leave Atlanta 7:12 a. m., arrive in Detroit 7:45 a. m. following day.

Leave Atlanta 5:10 p. m., arrive in Detroit 4:45 p. m. following day.

One way rate Atlanta to Detroit $18.50; parties of ten $15.20 or round trip summer tourist tickets can be purchased for $30 with stop-over privileges, good to return until October 31st.

From *NEW ORLEANS*: The Illinois Central Railroad quotes a summer excursion rate to Detroit and return of $43.95; the following tourist rates are also available:

To New York and return with liberal stop-overs $55.35 going via Chicago, Detroit, Niagara Falls, Buffalo, Albany, thence Hudson River Day Line boat to New York; returning via Old Dominion Line Steamer to Norfolk, Washington and back to New Orleans by any railroad except Southern.

To Boston and return with liberal stop-overs $63.70 via Chicago, Detroit, Buffalo, Niagara Falls, Toronto, Montreal, Boston, returning via New York, Washington, Atlanta, Montgomery, Mobile, New Orleans.

To New York as above and return by Southern Pacific Steamer to New Orleans $63.40, meals and berth on steamer included.

Or by way of Montreal and Boston and S. P. Steamer from New York to New Orleans $71.70, tickets good for 60 days from date of sale.

For information in regard to these tours address Edward Roddy, Passenger Agent, Illinois Central R. R., New Orleans, La.

Trains from New Orleans leave Illinois Central Station daily:

Leave New Orleans, Illinois Central, 8:05 p. m., arrive Chicago, Illinois Central, 10:00 p. m.

Leave Chicago, Michigan Central, 12:05 a. m., arrive Detroit, Michigan Central, 8:00 a. m.

Or; leave New Orleans, Illinois Central, 8:30 a. m., arrive Chicago, Illinois Central, 11:00 a. m. (get off train at Kensington).

Leave Chicago, Michigan Central, 11:05 a. m., arrive Detroit, Michigan Central, 5:55 p. m.

From *ST. LOUIS*: Members from this city will travel via Wabash Railroad; summer rate St. Louis to Detroit and return is $16.00. Tickets good for 30 days may be used for direct passage via Chicago. For $5.00 additional, tickets will be honored for boat trip from Detroit via Mackinac Island to Chicago. Pullman lower berths on direct trains St. Louis to Detroit $2.50. For further information, apply to H. M. Whelpley, 2342 Albion Place, St. Louis, Mo.

From *ST. PAUL* and *MINNEAPOLIS*: The following roads to Chicago are popular in the order named:

Chicago, Milwaukee & St. Paul; the Northwestern; the Great Western; Minneapolis and St. Louis; and the Burlington.

From Chicago, the Michigan Central or Wabash road can be taken.

Fare from the twin cities to Detroit one way, $13.55 Detroit and return same way, $27.00.

For choice of routes returning double one way fare.

Tickets may be purchased from any ticket agent. The C. M. & St. Paul and Great Western have each offered to furnish a special car if a party of twelve or more travel by their lines.

From *DENVER, COLORADO SPRINGS* and *PUEBLO*: The C. B. & Q. route is recommended as their tickets between above points and Chicago can be used via Omaha, St. Joseph or Kansas City, or from St. Louis direct at buyers' option.

Excursion tickets from above points to Detroit via the Burlington, good for stop-overs at all points *en route* and with return limit of 60 days from date of sale are $52; the one way fare is $28.10.

Excursions to other Eastern points via Detroit with stop-over privilege are, to Buffalo, N. Y., $54.10; Toronto, Ont., $54.10; Kingston, Ont., $60.00; Montreal, $61.50; Boston via Montreal, $67.10; Portland, Me., via Montreal, $68.85; New York City via N. Y. C. R. R., $71.00; N. Y. City via other lines, $68.00.

PACIFIC COAST POINTS: Special excursion round trip tickets from any Pacific Coast point to Chicago will be sold on August 17th, 18th, 20th, and 21st for $72.50 good for return until October 31st with stop-over privileges. Tickets sold for one line good for return over any other line, but if members from San Francisco elect to travel by way of Portland over the Shasta route, an extra charge of $17:50 each way will be made.

From Chicago to Detroit the regular rate prevails which is $5.50 each way or $11 round trip, or members may on the dates above mentioned purchase excursion tickets from Pacific points to New York and return for $108.50, securing stop-over at Detroit for convention and other stop-overs if desired.

There are seven routes available offering a great variety of scenery, viz.:

Southern Routes: Santa Fe, and Southern Pacific Sunset routes.

Central: Western Pacific, connecting with Denver and Rio Grande (a magnificent mountain route), and the Ogden route.

Northern Routes: (Differential fare from San Francisco) Northern Pacific, Canadian Pacific.

On the Overland Limited of the Southern Pacific an excess fare of $10 is charged; no excess fares on Santa Fe fast trains.

Committee on Transportation: Thos. F. Main, Chairman, New York, N. Y.; W. Bodemann, Chicago, Ill.; Wm. C. Alpers, Cleveland, Ohio; H. M. Whelpley, St. Louis, Mo.; Chas. G. Merrell, Cincinnati, Ohio; J. O. Burge, Nashville, Tenn.; Chas. Caspari, Jr., Baltimore, Md.; Fred I. Lackenbach, San Francisco, Cal.; L. A Seltzer, Detroit, Mich.; E. Floyd Allen, Minneapolis, Minn.; F. C. Godbold, New Orleans, La.; W. S. Elkins, Jr., Atlanta, Ga.; C. Herbert Packard, East Boston, Mass.; Lewis C. Hopp, Cleveland, Ohio; S. L. Bresler, Denver, Colo.

Respectfully submitted,

THOMAS F. MAIN, Chairman.

THE DETROIT HOTELS.

Members of the American Pharmaceutical Association, expecting to attend the Detroit meeting, beginning Monday, August 24, will be interested to know about the various hotels and their rates. We would urge that reservations be made reasonably early in order to avoid any doubt about getting satisfactory accommodations. Detroit is well filled with tourists in July and August, and it would be most unwise not to reserve your rooms and thus make sure of getting them.

The hotels are as follows:

Pontchartrain (official headquarters)—$2 to $2.50 for single room, $3 to $4 for double room; $3, $3.50, $4, $5 for single room with bath; $5, $6, $8 for double room with bath.

Cadillac (one block away)—$2 to $5; rooms with bath 50 cents extra; $1 less than twice the price when two occupy a room.

Griswold (two blocks away)—$1.50, $2, $2.50, $3; $2 and upward for rooms with bath; add $1 to the price when two occupy a room.

Ste. Claire (American plan—two blocks away)—$2.50 to $4.50; $3.50, $4 and $4.50 with bath.

Tuller (four blocks away)—$1.50 and upwards; add $1.50 when two occupy a room.

Charlevoix (five blocks away)—$1.50 and upwards; add $1 to price when two occupy a room.

Wayne (eight blocks away)—$2, $2.50, $3, $3.50, $4; $3.50 and upwards for rooms with bath; $1 additional when two occupy a room.

Plaza (five blocks away)—$2 for single rooms; $3 for double rooms; meals 50 cents each.

Lenox (five blocks away)—$1 single room; $1.50 double room; $9 per week single room with bath; $12 per week double room with bath.

Addison (eight blocks away)—$2 and $2.50 for one room; $3 and $3.50 for two rooms; $4 and $5 for three rooms.

It will be observed that the only American hotel in the list is the Ste. Claire.

GEORGE MAHLON BERINGER, Ph. M.*

SIXTY-FIRST PRESIDENT

AMERICAN PHARMACEUTICAL ASSOCIATION

* Philadelphia College of Pharmacy.

CONVENTION NUMBER

The Journal of the American Pharmaceutical Association

Volume III AUGUST, 1914 No. 8

Office of Publication, 63 Clinton Building, Columbus, Ohio.

Subscription, $4.00 per annum, within the United States. To Canada, $4.35. To other foreign countries in Postal Union, $4.50 per annum. Single copies, 35 cents.

Entered at the Postoffice at Columbus, Ohio, as Second-Class matter.

THE LEGISLATIVE PROBLEMS OF PHARMACY.*

JAMES H. BEAL, SC. D., LL. D.

Our forefathers placed their trust in an over-ruling Providence; the present generation relies mainly upon the legislature.

Our grandparents believed that the best method of meeting the difficulties of life was by the cultivation of the habits of thrift, economy and self-reliance, and that the proper remedy for social evils was the development of higher standards of citizenship, and an enlarged appreciation of the individual's duty to the state: now we are taught that the various difficulties of human life can be eliminated, and all the ills of society cured, by act of Congress or General Assembly.

The American system of commonwealths was established upon the theory that the best government was that which afforded the citizen the largest field for individual initiative and the most untrammeled opportunity for working out his own ideals of prosperity and happiness. So far have we drifted from this ancient and wholesome doctrine, that we are now attempting to make each citizen a ward of the state, and to guard and direct his every act and ambition, as if he were an irresponsible and heedless infant. We are piling statute upon statute, adding bureau to bureau and official to official, until the liberty of individual action and the responsibility of the citizen, are becoming obscured in a maze of artificial duties and scheduled prohibitions.

For morals we are beginning to substitute the provisions of statute law; and

*An address delivered before the North Carolina Pharmaceutical Association, June 17, 1914.

for the dictates of conscience, the arbitrary rulings of some autocratic bureau-official.

The American people have become possessed of a perfect fury for legislating. No matter what the difficulty, whether of a particular class or of the body politic, whether economic, social or moral, whether the temporary difficulties, arising from the changing forms of industry or commerce, or the permanent difficulties due to the inherent qualities of human nature, the first, and almost the only thought, is to appeal to the law-making bodies for relief.

No member of any legislature can find the time to even read, much less to digest and understand, the provisions of all the measures upon which he is asked to vote, each one of which, if enacted, would seriously affect, in greater or less degree, the liberty and possessions of every citizen of the state.

The modern social-industrial-commercial system constitutes an enormous complex which defies comprehension or analysis. Every new law introduces new wheels and cogs, the ultimate effect of which upon the existing complex, it is impossible to foresee, which often throws "out of gear" some of the most useful parts of the social machine, these dislocations calling for fresh amendments, so that the legislation-mad reformers are continuously chasing themselves around a circle of their own blunders.

Granting that our highly complex society needs more regulation than the comparatively simple social organization of a century ago, it cannot be denied that the annual flood of new laws is far beyond reason or necessity.

The courts are clogged with the consideration of cases involved in an entanglement of obscure and frequently contradictory statutes, and then we prate about "the law's delay" and the "uncertainties of justice," when properly our censure should be directed to our system of machine-made jurisprudence that no finite intelligence can reconcile or understand.

While every occupation and industry is more or less adversely affected by this hasty and ill-considered legislation, our own particular calling happens to be one that offers especial and peculiar opportunities for legislative attacks. Drugs and medicines are things of mystery to the unlearned, who cannot comprehend how the same substance can be either harmless or dangerous, a messenger of health or an agent of destruction, according to the manner of its use; and it is this popular prejudice which makes it so difficult to combat the efforts of bucolic statesmen who seek to bridle us with ridiculous and useless provisions.

The wrong use or misuse of a drug is always more widely advertised than its proper and lawful use. The countless thousands of cases where drugs are properly and beneficially employed are never heard of, while the comparatively few cases of misuse are heralded far and wide until the reading public is lead to believe that such misuses are of constant and regular occurrence, a situation which affords the savior-of-the-race-by-legislation-reformer the opportunity he most delights in, and serves as the excuse for the composition of bills which would either totally prohibit the sale of useful drugs or else impose such restrictions upon their sale as to amount in fact, if not in name, to practical prohibition.

If it were proposed to prohibit the sale of edged tools because they are sometimes the source of injury to careless users or may be employed for homicidal

purposes, the inadvisability of punishing the many for the doubtful protection of the few would be apparent to every one, yet the cases of accidental injuries from drugs or of their homicidal uses are probably much fewer in number than those which follow the general distribution of knives and razors.

Singularly enough, these restrictive measures frequently seem to be aimed especially at the druggist, regardless of how much of the same products may enter the hands of the public through other sources. Some years ago, while comparing the poison laws of the various states, I discovered that some of them applied in terms to druggists only, i. e., that while druggists were subjected to certain restrictions in the sale of poisonous substances, all other dealers were exempt from these requirements. Even now there is pending in Congress a bill which would impose very onerous conditions upon the dispensing of mercury bichloride by licensed physicians and druggists, but which would place no restriction whatever upon its sale by other persons, or in other words, the men whose learningand experience best qualify them to handle the substance with safety to the public, are to be hampered, while unqualified dealers are to be left free to do as they please.

As druggists, we do not pretend to claim that our business interests should be preferred to the public safety, nor do we object to *reasonable* and *efficient* regulations regarding the sale of poisons or dangerous drugs. What we do object to, are the half-baked efforts of hysterical reformers, who are unable to comprehend that the measures which they propose, would interfere needlessly with the proper and legitimate use of such articles, without abating the evils at which they are supposed to be aimed.

Unfortunately for our peace of mind, the signs of the times point to even more attempted drug-legislation in the future than in the past.

Since the enactment of the Federal Food and Drugs Act—for which, by the way, the drug trade was largely responsible—the regulation of the sale of drugs and medicines, has been recognized by the politicians as a legislative "soft snap," i. e., they have discovered that it is easy to appeal to popular prejudice, by proposing to legislate against some alleged enormous evil resulting from the sale of certain drugs, which alleged evils may be altogether imaginary or else molehills magnified by the sensational press to mountainous proportions.

Their perception that food- and drug-legislation affords a cheap and easy path to glory, has also been stimulated by their discovery that the drug trade has been willing to accept a tremendous amount of punishment, without striking back at its punishers, a kind of prey which the demagogue especially delights to pursue.

For the drug trade, legislation is no longer an academic subject that may be debated pleasantly at the annual convention, and then dismissed until the next meeting, but it is a live and vital topic which demands vigilance and aggressiveness throughout the year, if we are to avoid the gradual imposition of burdens that will, at length, make business conditions intolerable.

We cannot prevent the constant flinging into the legislative hopper of all sorts of meddlesome legislation, but must rely upon our efforts to prevent its enactment or to secure its proper amendment, and in many cases we shall discover that the only appropriate amendment is the classic one "to strike out all after the enacting clause."

It is time that the drug trade should abandon its usual apologetic attitude when attacked in the legislature or by the sensational press, and demand proof for the asserted necessity for additional restrictive legislation. All drug legislation that does not originate with the State Pharmaceutical Association, or with its legislative committee, should be opposed on general principles. In other words, our attitude should be one of general hostility to all drug legislation proposed by outside interests, until its propounders have demonstrated its absolute necessity, that the demand for it is not based upon exaggerated and sensational reports which have no substantial foundation in fact, and that the restrictions to be imposed will bear *equally upon all* who handle or deal in the same or similar products, and not merely upon the class of dealers who happen to be known as druggists.

Not only must we present strenuous opposition to unnecessary new restrictive drug legislation, but it is equally incumbent upon us to seek the correction of the imperfect and sometimes inconsistent measures, which our past inertness and lack of interest have permitted to be placed upon the statute books.

The Poison Laws.—In some states, in addition to that which is specifically known as the poison law, there may be two or three, or a half a dozen other acts, relating to particular poisonous drugs, overlapping each other in their provisions. In some cases the confusion is so great as to make it impossible to decide which law should apply in a given case, as compliance with one, may make the druggist liable for the violation of another.. These laws should be consolidated and rewritten, and made so specific, that there can be no doubt as to their scope and application.

One consideration frequently overlooked when poison legislation is proposed, is that the bulk of lethal agents employed in the arts and in agriculture, immeasurably exceed the amount of the same or of similar agents handled by the druggist. Where the paint stores sell tons, the druggist sells ounces. If the existing laws make any distinction between lethal agents sold in the drug store and those sold elsewhere, the discrimination should be removed. If the druggist may sell poisons only on physicians' prescriptions, then the paint store and general dealer should be restricted in like manner.

Since almost any drug or chemical that is sufficiently active to serve as an effective therapeutic agent, will also be active enough to injure, if used to excess, there is always room for the fanatical reformer to declare it dangerous, and to propose legislation to prohibit its sale. If some check is not placed upon legislation of this sort, the drug-store shelves will soon be little better than a historical museum of the drugs which we were once permitted to sell.

The Anti-Narcotic Laws.—Closely connected with the poison laws, and frequently forming a part of them, are the laws relating to the sale of habit-forming narcotic drugs. Like the former, they are often a patchwork of overlapping statutes and incomplete. In some directions they may be needlessly restrictive, and in other directions not restrictive enough. Where they do not already do so, they should be amended so as to restrict the handling of these drugs to legitimate channels, i. e., to the licensed pharmacist and physician, and a complete and accurate method for tracing the purchase and sale of the drugs should be provided

In this connection, we should guard against the disposition of those misinformed reformers, who would extend the list of habit-forming drugs to include nearly everything in the Pharmacopœia. Because a man has learned from experience that a particular remedy, most certainly, relieves him from a recurrent ailment or symptom, so that he commonly or "habitually" uses it, in preference to other remedies for that ailment, by no means renders it a habit-forming drug. To call such drugs habit-forming, is a mere play upon the words *habit* and *habitual*. It is doubtful if a drug can properly be called *habit-forming*, unless it is one the repeated use of which induces a craving, which only the drug will satisfy, its repeated use not being to relieve the ailment or symptom for which it was originally taken, but to relieve a condition which the use of the drug itself has created.

It may or may not be good policy to restrict the liberty of the citizen to select his own remedies, but it can scarcely be regarded as a proper policy to place restrictions upon popular remedies, by definitions specially created to suit the particular case, or by the verbal trick of calling them "habit-forming drugs."

Neither does it necessarily follow that the presence of a minute proportion of a habit-forming drug, constitutes a habit-forming drug of the mixture in which it is found. If the proportion of the drug present, is sufficient to create the drug-habit, when the use of the mixture is long continued, or if the amount is sufficient to satisfy a habit already existing, then the combination can properly be placed in the category of habit-forming drugs, otherwise not. The question is one of fact in every instance, and can be answered only by an impartial consideration of the evidence.

Both pharmacy and medicine are interested in legislation respecting the sale of habit-forming drugs, and representatives of both, should participate equally in the framing of such measures, and in appearing before committees of the legislature, to defend or oppose narcotic legislation when necessary. In fact, I might go farther, and say that physicians and pharmacists should coöperate in like manner upon all measures which deal with matters of joint interest to their two professions.

It is undeniable that a certain percentage of both doctors and druggists have been interested in the illegitimate traffic in habit-forming narcotic drugs, but it is monstrously unjust to charge either doctors or druggists with general participation in such traffic. It is only the exceptional physician who is careless in the prescribing or dispensing of these drugs, and only the exceptional pharmacist who desires or encourages the patronage of *habitues*.

But whether responsible or not for narcotic drug evils, both the conscientious physician and the conscientious pharmacist must give up some of his just prerogatives and must submit to some inconveniences in order that the traffic may be brought under proper control.

If the law is so liberal in its provisions as not to inconvenience the legitimate dispenser, it will not restrain those who participate in the illegitimate traffic, and if made sufficiently drastic to insure the detection and punishment of the latter class, it is bound to cause some occasional hardship to those who dispense narcotic drugs legitimately. As is always the case in the restraint of crime, the just

man must give up some of his liberty, in order to supply the means for the discovery and punishment of the criminal.

In this connection, it is well to have in mind the fact that the evils due to the improper use of narcotic drugs, have been enormously exaggerated. On an actual census of the *habitues* in almost any section, the "hundreds of victims" of the yellow press, will dwindle to dozens or even less. In one small community where an agitator asserted that there were at least fifty victims of the drug-habit, careful inquiry among doctors and druggists, developed the existence of two morphine *habitues* and a suspected third, without the discovery of a single user of cocaine. Doubtless the percentage of victims would run higher in some other communities, but, in most cases, we could safely deduct 90 percent from the stories of the sensational press, and still cover all of the cases discoverable by an exact census, and furthermore, in districts where the cases were most numerous, it would be discovered that the drugs were distributed, mainly, by persons who have no connection with either pharmacy or medicine, and whose supplies are obtained from a distance, through underground channels.

As a matter of course, we do not want to be responsible for even a few victims of the drug habit, but pharmacists and physicians should certainly defend themselves from the reckless charges, of wholesale debauchery of the public through habit-forming drugs, that have been disseminated by hysterical reformers and the sensational press.

The General Food and Drug Laws.—The food and drugs acts, or the statutes which fix the definitions and prescribe penalties for the adulteration and misbranding of foods and drugs, are, generally speaking, fairly satisfactory to the drug trade, that is their defects are rather those of detail than of general principles.

Perhaps the greatest defect of the state food and drug laws, is their lack of agreement with each other and with the Federal law of 1906. While following the same general pattern, no two of them are exactly alike in particulars. These differences, especially as to labeling requirements, are a constant annoyance, and occasionally may become a serious menace, to the retailer. The jobber or manufacturer, having labeled his products in accordance with the Federal law, may ship them into any state regardless of state law, but, after they have left the domain of interstate commerce, the products come under the control of the local statutes, and the retailer may be held liable, if they do not conform thereto. When propositions are made to amend these laws, the drug trade should see to it that they are brought more nearly into conformity with the Federal law, and should strongly resist all amendments that would tend to increase their present discrepancies.

Although representatives of the drug trade played a prominent part in the drafting and enactment of the food and drugs acts, one of the things which they evidently failed to foresee, was the importance of making a distinction between actual adulteration and a mere variation from the legal standard, without connivance or guilty intent on the part of the dealer.

The popular understanding of adulteration, is the addition of a cheaper substance to a more expensive one, as the addition of water to milk, or the withdrawal of a valuable constituent, as the removal of cream, both processes being

for the purpose of increasing the profits of the dealer at the expense of the consumer. By definition, however, any variation from the standard constitutes an adulteration, even if the quality of the product be superior to the standard fixed by law. The druggist who should sell genuine imported bay rum, would be guilty of selling an adulterated drug, because the standard of the law happens to be a fictitious bay rum. Thus the druggist may be legally guilty of fraud, when morally innocent, or morally guilty of fraud, and legally innocent. Again, nature frequently produces drugs of alkaloidal strength below the legal standard. The drugs are genuine, though deficient in strength, but if the dealer disposes of them as genuine, he is, legally, guilty of adulteration. Numerous other examples might be cited, where one might be held guilty under the law, when his acts were entirely devoid of evil intent.

Undoubtedly, fixed standards of quality should be established and enforced, but the *definition of the offense* should be altered, so that the dealer in drugs who innocently sells goods which vary from the standard, will be punishable only for his actual fault, and will not be liable to the disgrace of an arrest and conviction, for an act which, in the public mind, always involves the element of moral turpitude.

That this defect has not occasioned more hardship to the drug trade than it has, is due to the fortunate presence in the law of the so-called "variation clause," which permits the sale of articles which vary from the official standards, provided the variation is stated on the label.

If the variation clause should ever be repealed, as has been proposed, the situation would then become one of serious menace to the entire drug trade, for, under such conditions, it would be practically impossible to conduct a drug business without constant technical violations of the law.

Another serious defect of the food and drugs act, is that they fail to provide the means whereby the manufacturer or dealer may ascertain, in advance, that his labels are in accordance with the law, or, rather, that they are in accordance with the administrative officer's interpretation of the law.

In numerous cases, there is so much room for difference of opinion, that no one can state in advance what the decision of the department may be. On more than a few occasions, the manufacturer, after the examination of precedents and the taking of legal advice, has labeled his product in good faith, only to be later haled into court, as a dealer in misbranded goods.

Generally the administrators of the law, when appealed to, will voluntarily give advice as to the labels which they will regard as legal, but they may refuse this advice if they choose, and some of them have done so. Every food and drugs act should, therefore, contain a provision specifically requiring the executors of the law to pass upon the sufficiency of labels submitted for inspection, and prosecutions for alleged misbranding should be restrained, until after dealers have been notified of the insufficiency of their labels and afforded an opportunity for their correction.

Laws Regulating the Practice of Pharmacy.—The general pharmacy laws, or those regulating admission to the practice of pharmacy, are, in most states, in need of a general overhauling. Most of them were in the nature of experiments when passed, and only time could demonstrate their imperfections.

As a rule, these laws provide for two grades of licentiates, a Registered or Licensed Pharmacist, who may conduct or manage a drug store, and a Registered Assistant, who may perform any of the work in a drug store, except to act as the responsible head or manager.

I believe that experience has demonstrated the advisability of at least one other grade of license, namely, that of licensed storekeeper, to be issued to the keepers of general stores, and stores in towns where no registered pharmacist is located, authorizing the holders of such licenses to sell such common household remedies as are specified by the Board of Pharmacy. The license should be issued for a small sum; should be renewed annually, and should specify the drugs and remedies which may be sold by the licensee.

Some druggists have been inclined to oppose the granting of such licenses, on the ground that it is a recognition of the right of unqualified persons to sell drugs. The answer to this objection is, that it is always wise to recognize an existing fact. Unqualified dealers, already, have this right under the law, and we are not likely to live to see a legislature that will take it away from them. The conversion of these dealers into a class of licensees by themselves, is a step towards bringing the sale of drugs by unqualified persons, under the control of the board of pharmacy, and we shall be foolish if we do not accept the opportunity if it is offered to us.

The most important licentiate is, of course, the Registered or Licensed Pharmacist, or the licentiate who is authorized to act as the responsible head of a drug store, either of his own or for another owner. If the responsible head or manager, the man who buys the goods, directs the daily conduct of the store, and determines the general policy of the establishment, is properly qualified in character, by education and experience, the public safety will be well guarded, and the main purpose of the pharmacy law accomplished.

Of late years the proposition to require graduation from a reputable college of pharmacy, before admitting candidates to examination for the license of Registered Pharmacist, or what has come to be known as the "graduation prerequisite," has become a question of importance. Several states, already, have such a requirement in the law, and several others have practically the same requirement, by virtue of a rule of the State Board of Pharmacy.

Naturally such an advance over the requirements once thought necessary, has provoked controversy.

One objection offered to making college graduation a requirement for registration, is, that it would tend to reduce the Board of Pharmacy to a subordinate position and make it subservient to the colleges, is an entirely unwarranted conclusion. Its effect would be exactly the opposite, because the Board would have power to name the requirements of the colleges whose graduates it would admit to its examinations, and the colleges would thus be brought under the direct and permanent control of the Board of Pharmacy.

Another objection which has been urged, is, that it should make no difference to the Board of Pharmacy how or where the candidate obtains his qualifications, provided he has them, and this is an objection the force and cogency of which cannot be denied. The fact remains, however, that there is no place and no method, for a complete and systematic training in the theory and art of pharmacy,

equal to that provided in a properly equipped and properly conducted college or school of pharmacy.

But cannot the Board, by its examination, ascertain whether the candidate has had the requisite systematic training? No, it cannot. Examinations have a useful and necessary place in the educational system, but they have their limitations. Mental growth or education, like physical growth, requires regularly supplied *pabulum* and proper exercise. The examination of a human stomach might determine what the subject had for his last meal, but it would not show that he had received the continued nourishment and exercise necessary to the production of a well-developed and properly-trained human body.

The board-examination may determine what the candidate has in his memory at the time of the examination, but it cannot, except to a very limited extent, ascertain whether this information was gained in such a regular and systematic manner as to render it probable that it has become a part of his permanent mental equipment or whether it is a medley of miscellaneous information gathered haphazard, and retained by a feat of memory.

Experienced educators recognize the fact, that even the final college-examination is not a sufficient test to prove that the candidate for graduation has gained the proper benefit from his college work, and, therefore, the student is tested from day to day and from week to week, and unless his daily and monthly record has reached the required standard, the result of his final examination will not secure him the coveted diploma.

My thesis is, that two kinds of training are necessary for such a complete and well rounded education of the future pharmacist as will make him a safe guardian of the public health, and a creditable representative of his profession, namely, a sufficient period of actual experience in the drug store and the systematic training of a reliable college or school of pharmacy. This statement is made with full recognition of the fact, that there have been many pharmacists who have been conspicuously successful without the benefit of college training, and also that there have been college graduates who have been conspicuous failures. The college cannot supply deficiencies in mind and character: it can only cultivate and train the qualities which are provided by the candidate, but the future pharmacist, who misses this training, will have missed something that would have added completeness and finish to his career, no matter how successful he may otherwise become.

Another argument offered in opposition to the graduation pre-requisite, is, that it would act as a deterrent to many who will prefer to take up some other occupation or line of business, on the ground that the rewards of pharmacy are at present not sufficient to justify the time and expense necessary to secure a college education.

This may be true, but if so, I do not see why the contingency should worry the present race of pharmacists. If no new drug stores should be started within the next quarter of a century, the existing ones would, very likely, be able to supply all the probable demands for drugs and medicines, and then, perhaps, the rewards of pharmacy would be sufficient to justify a college education.

It should be kept in mind that the graduation pre-requisite would not apply to those already qualified to practice pharmacy, but only to future candidates, and

also that it would not apply, either in the present or in the future, to clerks or assistants, but only to those who desired to become managers. Under a pre-requisite law, the non-graduate would have every opportunity to perform the functions of a pharmacist that he has now, except to become the responsible head or manager of a drug store.

The law would also, necessarily, have to allow a reasonable length of time before the graduation requirement went into effect, to permit the full registration of the non-graduates who were previously acting as clerks or assistants. In other words, the law would, in any case, apply only to those who in the future should desire to enter pharmacy, and not to those already within its ranks, whether proprietors or clerks.

This is a matter which each state must settle for itself, and it would be better to proceed too slowly than too quickly, or at least to proceed no more rapidly than is justified by the progress of sentiment among the pharmacists of the state, but it should be kept in mind that, to admit that college training is *desirable* for the preparation of the future pharmacist, is, in effect, an admission that it is to that extent a necessity.

The question is one which has two sides to it, and we should not be too dogmatic either way, but I believe the weight of argument is in favor of the graduation pre-requisite, and that the sooner it is universally adopted, the better it will be, both for the present generation of pharmacists and for those who come after them.

In this fragmentary and somewhat disjointed review, I have aimed to sketch, in very broad outline, some of the legislative problems to which we must direct attention, and, especially, have I aimed to emphasize the thought that, as a general policy, we should oppose all additional restrictive legislation until convinced of its absolute necessity, either to correct existing laws or to enable us to meet the artificial conditions that these laws have created.

But whether we are to oppose or to support proposed new legislation, our only hope to do so successfully, lies in our ability to concentrate the efforts of a thoroughly united drug trade to that purpose.

The Needed Solidarity of Pharmacy.—One of the greatest needs of the drug trade—*perhaps its very greatest need*—is a more decided craft spirit, or craft consciousness; a clearer realization of the fact that all of those connected with the production, manufacture or distribution of drugs and medicines, constitute a solidarity, in which the interests of every unit radiate to every part, so that an injury to one is an injury to every unit within the circumference,—something like the *esprit de corps* that prompts the soldier to identify himself with the honor of the flag or the reputation of his regiment.

In times not long since, there was no more coherence in the drug trade than in a heap of sand, which changes its contour with every wind that passes over it. There was no fixity of purpose, and but little, if any, spirit of craft loyalty. The actual, if not expressed, motto was that of the trade corsair, "Every fellow for himself, and the devil take the hindmost"—which he usually did—and so successful was he in the capture of the rear guard, that the front ranks began to crowd a little closer together for mutual defense, which has brought about the condition of half-hearted organization that now exists.

Retailers, manufacturers, and wholesalers have all, at times, been ready to sacrifice the interests of each other, and of the members of their own class, for the sake of some temporary personal advantage. It must be confessed, with shame and humiliation, that the reason why the earnest attempts of some proprietors to protect the advertised retail prices of their goods, have not succeeded, has been that there have always been some retailers ready to betray their class by surreptitiously supplying the trade-demoralizing price cutter. During the past year a member of a concern which has been unable to buy certain proprietary articles from their manufacturers, told me he had no difficulty whatever in procuring abundant supplies through retailers who, openly at least, pretend to be supporting the proprietors' plans for price protection.

No policy can absolutely prevent the presence of traitors within the ranks, but a well-developed and constantly-stimulated spirit of Craft Loyalty will discourage treason, and minimize its effects, when it does occur.

The Necessity for United Action.—The experience of the past few years, should have convinced us, that we can hope to make headway against the flood of obnoxious legislation by which we are continually threatened, only by united and unanimous action all along the line, from the largest manufacturer and wholesaler, down to the smallest retail dealer in drugs.

The rivalries and differences, that have at times disturbed the peace between the several divisions of the drug trade, are petty and insignificant, when compared to the larger interests which they have in common, and nowhere are these common interests more in evidence, than in matters of legislation, whether state or national. Unless we can present a united front to the attacks of the sensational reformer, or of the notoriety-seeking administrative official, anxious to magnify the importance of his office by the discovery of mares' nests in the drug business, we can only expect to be beaten in detail.

Neither manufacturers, jobbers nor retailers acting alone, can successfully defend themselves from the destructive legislation of the hysterical reformer, nor from the attacks of the sensational press, which furnishes his ammunition. But each division of the trade can exert a force and influence of its own, and these forces and influences, when united, can be well nigh irresistible.

According to the ancient fable, when the woodman requested permission of the forest, to take a small tree to make a handle for his ax, the intended victim insisted strenuously upon its rights as a member of the community, but the big trees said, "It is only a miserable little sapling, let the woodman have it."

The ax was helved accordingly, and it was not long until the whole forest was prostrated, before the instrument, to the perfecting of which the rights of the insignificant sapling had been sacrificed.

Any branch of the drug trade which consents to the invasion of the just rights of the smallest and most insignificant members, either of its own or of any other branch of the trade, is consenting to a thing that is wrong in principle, and in the end must suffer a part of the penalty.

Section on Historical Pharmacy

Papers Presented at the Sixty-First Annual Convention

THE TABLET INDUSTRY—ITS EVOLUTION AND PRESENT STATUS.

L. F. KEBLER, PH. C., M. D.

Continued from Page 958, July Issue.

Puckner and Clark, and Puckner and Hilpert restricted their observations entirely to the determination of phenol in tablets of bismuth, opium and phenol. It is conceded by all that volatile agents of the phenol type should not be compressed into tablet form and that manufacturers should prepare such commodities only on special request. They should furthermore safeguard their reputation by placing upon the label a statement of the following character: "The amount of phenol declared to be present in each tablet according to label was used in their preparation, but on account of the volatile nature of phenol it is impossible to give any assurance as to the amount present in the finished product and it is supplied with this understanding." The results obtained by these workers are given herein, but they do not form a part of any general conclusion made here relating to tablets, except in so far as it may pertain to tablets containing volatile agents.

TABLE VIII.—*Determination of Phenol in Bismuth, Opium and Phenol Tablets, by Puckner, Clark and Hilpert.*

Product.	Amount declared.	Amount found.	Variation.
	Grains.	*Grains.*	*Percent.*
Phenol[1]	0.5	0.109	—78.1
do	.5	.244	—51.2
do	.125	.066	—47.2
do	.5	.351	—29.8
do	.5	.235	—43.
do	.5	.363	—27.4
do	.5	.173	—65.4
do	.5	.132	—73.6
do	.5	.069	—86.2
do	.5	.231	—53.8
do	.5	.197	—60.6
do	.5	.063	—87.4
do [2]	.5	.1710	—65.8
do	.5	.2880	—42.4
do	.125	.0794	—36.5
do	.5	.2343	—53.1
do	.5	.2670	—46.6
do	.5	.1159	—76.8

[1]Puckner, W. A., and Clark, A. H., J. Am. Med. Asso., 1908, *51*: 381.
[2]Puckner, W. A., and Hilpert, W. S., J. Am. Med. Asso., 1910, *55*: 2169

Product.	Amount declared.	Amount found.	Variation.
	Grains.	*Grains.*	*Percent.*
Phenol[3]	.5	.1405	—71.9
do	.5	.2688	—46.3
do	.5	.0614	—87.7
do	.5	.1725	—65.5
do	.5	.3422	—31.6
do	.125	.1035	—16.8
do	.5	.2342	—53.2
do	.5	.1907	—61.8
do	.5	.1243	—75.1
do	.5	.1412	—71.8
do	.5	.5632	+12.6
do	.5	.2073	—58.5

Seel and Friederich made the latest observations recorded in literature. They examined tablets of only three separate drugs and in one instance but two determinations were made. The results by these investigators, recorded in Table 9, are satisfactory. A large majority of the tablets examined contained less than the amount declared, but for all practical purposes they come within the 10 percent maximum variation from the amount declared upon the label.

TABLE IX.—*Results of Analyses of Tablets by Seel and Friederich.*[4]

Product.	Amount declared.	Amount found.	Variation.
	Grams.	*Grams.*	*Percent.*
Acetylsalicylic acid	0.5	0.4912	—1.7
do	.5	.4712	—5.8
do	.5	.5038	+0.8
do	.5	.4872	—2.5
do	.5	.4408	—11.8
do	.5	.498	—0.4
do	.5	.533	+6.6
do	.5	.498	—0.4
do	.5	.491	—1.8
do	.5	.4822	—3.5
do	.5	.483	—3.4
do	.5	.492	—1.6
Pyrazolphenyldimethylsalicylate	.5	.447	—10.6
do	.5	.490	—2.0
do	.5	.5	0.0
Salipyrin	.5	.452	—9.6
do	1.0	.923	—7.7

From the results recorded by Liebreich fifteen years ago, and the observations of Seel and Friederich, a 10 percent maximum variation from the declaration upon the label would be satisfactory. But the observations made by other analysts militate against such a restricted standard. In order to obtain more extended data on this point, a large number of tablets of American make were examined and the results are recorded in Table 10. These results represent the average of ten or more tablets.

[3]Puckner, W. A., and Hilpert, W. S., J. Am. Med. Asso., 1911, *56:* 1344.
[4]Seel, Eugen, and Friederich, Albert, Med. Klin., 1911, *7:* 888, 928.

TABLE X.—*Results of the Analyses of Tablets made by Various Chemists in the Bureau of Chemistry.*

Product.	Amount declared.	Amount found.	Variation.
	Grains.	*Grains.*	*Percent.*
Acetanilid	2.	1.836	—8.2
do	2.	1.52	—24.0
do	2.5	2.46	—1.6
do	4.	3.88	—3.
do	5.	4.	—20.
do	2.	1.85	—7.5
do	5.	4.35	—13.
do	3.	2.50	—17.
do	3.	1.86	—38.
do	3.	2.57	—14.3
do	3.	2.37	—21.
do	2.	1.957	—2.1
do	2.	1.90	—5.
do	2.	1.78	—11.0
do	2.	1.996	—.2
do	2.	1.605	—19.8
do	1.	0.848	—15.2
do	3.	3.02	+.6
do	5.	4.832	—3.4
Acetanilid comp.:			
Acetanilid	3.5	2.563	—26.7
Caffein, citrated	.5	.53	+6.
Acetanilid comp.:			
Acetanilid	2.	1.919	—4.1
Caffein, citrated	.5	.486	—3.
Acetanilid comp. No. 1:			
Acetanilid	2.	2.	00
Caffein, citrated	.5	.447	—10.6
Acetanilid comp. No. 2:			
Acetanilid	2.5	1.954	—21.8
Caffein, citrated	1.	.782	—21.8
Acetanilid comp. No. 6:			
Acetanilid	2.5	2.27	—9.2
Caffein, citrated	1.	.949	—5.
Acetanilid comp.:			
Acetanilid	3.	2.25	—25.
Caffein	.5	.35	—30.
Acetanilid comp. (Searle):			
Acetanilid	3.	3.008	+.3
Caffein	1.	.943	—5.7
Acetanilid comp.:			
Acetanilid	1.4	1.414	+1.
Caffein	.2	.201	+.5
Acetanilid comp.:			
Acetanilid	3.5	3.372	—3.6
Caffein, citrated	.5	.488	—2.4
Acetanilid comp.:			
Acetanilid	3.5	3.546	+1.3
Caffein	.5	.487	—2.6
Acetanilid comp.:			
Acetanilid	3.5	2.771	—20.8
Caffein	.5	.426	—15.
Acetanilid comp. (Aulde):			
Acetanilid	3.5	3.34	—4.5
Caffein	.5	.518	+3.6
Acetanilid comp:			
Acetanilid	3.5	2.998	—14.4
Caffein	.25	.422	+69.

TABLE X.—(*Continued.*)

Product.	Amount declared.	Amount found.	Variation.
	Grains.	*Grains.*	*Percent.*
Acetanilid comp:			
Acetanilid	2.5	2.54	+1.6
Caffein, citrated	.5	.62	+24.
Acetanilid comp. (Kerr):			
Acetanilid	3.	2.301	—23.3
Caffein, citrated	.5	.546	+9.
Acetanilid comp:			
Acetanilid	3.5	2.69	—23.
Caffein, citrated	.5	.474	—5.
Acetanilid comp:			
Acetanilid	3.0	3.11	+3.6
Caffein, citrated	.5	.524	+4.8
Acetanilid comp:			
Acetanilid	3.5	3.104	—11.4
Caffein	.5	.474	—5.2
Acetanilid comp:			
Acetanilid	3.5	3.428	—2.1
Caffein, citrated	.5	.505	+1.
Acetanilid comp:			
Acetanilid	3.	2.576	—14.1
Caffein, citrated	.5	.447	—10.6
Acetanilid comp:			
Acetanilid	3.5	2.7	—23.
Caffein	.5	.42	—16.
Acetanilid comp:			
Acetanilid	3.5	3.303	—5.6
Caffein	.5	.41	—18.
Acetanilid comp:			
Acetanilid	3.0	2.835	—5.5
Caffein	.5	.491	—2.
Acetanilid comp. (Aulde):			
Acetanilid	.35	.336	—4.
Caffein, citrated	.05	.054	+8.4
Acetanilid comp. (Aulde):			
Acetanilid	3.5	3.28	—6.3
Caffein, citrated	.5	.486	—3.
Acetanilid comp., powd.:			
Acetanilid	3.5	3.455	—1.3
Caffein	.5	.496	—1.
Acetanilid comp., Special:			
Acetanilid	3.	2.955	—1.5
Caffein, citrated	.5	.515	+3.
Acetanilid comp:			
Acetanilid	2.5	2.29	—8.4
Caffein, citrated	1.0	.856	—14.4
Acetanilid comp.:			
Acetanilid	2.	1.77	—11.5
Caffein, citrated	.5	.432	—13.6
Acetanilid comp.:			
Acetanilid	3.	2.659	—11.4
Caffein	1.	.874	—12.6
Acetanilid comp.:			
Acetanilid	3.	2.743	—8.6
Caffein, citrated	.5	.439	—12.
Acetanilid comp.:			
Acetanilid	3.	2.844	—5.2
Caffein, citrated	.5	.475	—5.

TABLE X.—(*Continued.*)

Product.	Amount declared.	Amount found.	Variation.
	Grains.	*Grains.*	*Percent.*
Acetanilid comp. (Aulde):			
Acetanilid	3.5	3.381	—3.4
Caffein	.5	.47	—6.
Acetanilid comp. (Hubbard):			
Acetanilid	3.5	3.235	—7.6
Caffein	1.	.92	—8.
Acetanilid comp., pow. U. S. P.:			
Acetanilid	3.5	3.49	—.3
Caffein, citrated	.5	.52	+4.
Acetanilid and codein:			
Acetanilid	3.3	3.27	—1.
Codein	.25	.24	—4.
Caffein		.46	
Acetanilid	3.5	2.56	—27.
and codein (sulphate)	.25	.17	—32.
and caffein, citrated	.5	.37	—26.
Acetanilid comp.:			
Acetanilid	3.5	2.896	—17.2
Caffein, citrated	.5	.44	—12.
Codein	.125	.065	—48.
Acetanilid comp.:			
Acetanilid	3.	3.20	+6.7
Morphin sulphate	1/22	.04	—12.
Acetanilid comp.:			
Acetanilid	2.5	1.849	—26.
Sodium salicylate	1.	.903	—9.7
Acetanilid comp. and codein:			
Codein sulphate	.25	.264	+5.6
Acetanilid	3.325	3.366	+1.2
Caffein, citrated	.475	.48	+1.
Acetanilid comp. and codein:			
Acetanilid	3.	2.734	—8.9
Caffein, citrated	.5	.462	—8.
Codein sulphate	.25	.143	—42.8
Acetanilid comp. and codein:			
Acetanilid	3.325	2.554	—23.
Caffein	.475	.342	—28.
Codein	.25	.158	—36.8
Acetanilid comp. and codein:			
Codein sulphate	.25	.227	—9.
Acetanilid	3.	2.813	—6.2
Caffein, citrated	1.	.865	—13.5
Acetanilid comp. with codein:			
Acetanilid	3.	2.98	—.7
Codein	.25	.23	—8.
Caffein, citrated	.5	.5	000.
Acetanilid comp. with codein:			
Acetanilid	3.5	3.16	—10.
Caffein, citrated	.25	.33	+32.
Codein sulphate	.25	.20	—20.
Acetanilid and quinin:			
Acetanilid	2.5	2.42	—3.
Quinin sulphate	2.5	2.4	—4.
Acetanilid and			
Sodium bromid	3.5	2.90	—17.
Caffein, citrated		.566	
Acetanilid and sodium comp.:			
Acetanilid	3.5	3.45	—1.4
Caffein, citrated	.5	.455	—9.

TABLE X.—(*Continued.*)

Product.	Amount declared.	Amount found.	Variation.
	Grains.	*Grains.*	*Percent.*
Acetanilid and sodium comp.:			
Acetanilid	3.5	3.4	—3.
Caffein	.25	.235	—6.
Acetanilid and sodium comp.:			
Acetanilid	2.	1.926	—3.7
Sodium salicylate	3.	2.839	—5.4
Acetanilid and sodium comp.:			
Acetanilid	2.5	2.336	—6.5
Caffein, citrated	1.	.902	—10.
Acetanilid and sodium comp.:			
Acetanilid	2.5	2.515	+.6
Caffein, citrated	1.	.977	—2.3
Acetanilid and sodium comp.:			
Acetanilid	3.5	3.42	—2.3
Caffein	.25	.24	—4.
Acetanilid and sodium comp.:			
Acetanilid	3.5	3.02	—13.
Caffein	.5	.51	+2.
Acetanilid and sodium comp.:			
Acetanilid	3.5	3.367	—3.8
Caffein, citrated	.5	.487	—3.
Acetanilid and sodium comp.:			
Acetanilid	3.5	3.245	—7.3
Caffein, citrated	.5	.494	—1.6
Acetanilid and sodium comp.:			
Acetanilid	3.5	3.249	—7.2
Caffein, citrated	.5	.441	—12.
Acetanilid and sodium comp. with codein:			
Acetanilid	3.5	3.232	—7.6
Caffein	.25	.236	—5.6
Codein	.25	.239	—4.4
Acetanilid and sodium comp.:			
Acetanilid	3.5	3.459	—1.2
Caffein, citrated	.5	.510	+2.
Acetanilid and sodium comp.:			
Acetanilid	3.5	3.507	+.2
Caffein, citrated	.5	.53	+6.
Acetanilid and sodium comp.:			
Acetanilid	3.5	3.4	—3.
Caffein, citrated	.5	.523	+4.6
Acetanilid and sodium comp.:			
Acetanilid	3.5	3.386	—3.2
Caffein, citrated	.5	.493	—1.4
Acetanilid and sodium comp.:			
Acetanilid	2.5	1.966	—21.4
Caffein, citrated	1.	.905	—9.5
Acetanilid and sodium comp.:			
Acetanilid	3.5	3.477	—.65
Sodium bicarbonate	.9	.867	—4.
Sodium bromid	.1	.111	+11.
Caffein	.25	.238	—5.
Acetanilid and sodium comp.:			
Acetanilid	3.5	2.898	—17.2
Caffein, citrated	.5	.431	—14.
Acetphenetidin	5.	4.547	—9.
do	2.	1.97	—1.5
do	3.	2.31	—23.
do	3.	3.05	+1.6
do	3.	2.6	—13.3
do	5.	4.6	—8.

TABLE X.—(*Continued.*)

Product.	Amount declared.	Amount found.	Variation.
	Grains.	*Grains.*	*Percent.*
Acetphenetidin	3.	2.7	—10.
do	3.	2.98	—.6
do	2.	2.15	+7.5
do	5.	4.59	—8.2
do	3.	2.84	—5.33
do	3.	3.01	+.3
do	3.	2.53	—15.7
do	2.	1.56	—22.
do	5.	4.196	—16.
do	2.	1.819	—9.
do	2.	1.47	—26.
do	5.	4.16	—16.8
do	3.	2.84	—5.33
do	2.	1.80	—10.
Acid salicylic	2.5	1.87	—25.
Morphin (sulphate)	1/12	1/24	—50.
Ammonium salicylate	.166	.162	—2.4
do	2.5	2.295	—8.2
do	5.	6.28	+25.
Ammonium salicylate comp.:			
Ammonium salicylate	3.	3.25	+8.
Phenacetin	1.	1.	00.
Caffein	.5	.5	00.
Ammonium salicylate comp.:			
Phenacetin	1.	.85	—15.
Salicin	1.5	.989	—40.7
Ammonium salicylate	3.	1.685	—47.2
Caffein	.5	.465	—7.
Analgesic comp. with codein:			
Acetphenetidin	1.	1.	00.
Acetanilid	2.	1.96	—2.
Codein sulphate	.25	.225	—10.
Sodium salicylate	1.	1.1	+10.
Caffein	.5	.49	—2.
Anodyne comp.:			
Acetanilid	3.5	3.516	+.5
Caffein	.5	.494	—1.
Anodyne comp.:			
Acetanilid	3.5	3.57	+2.
Caffein	.5	.495	—1.
Antipyrin	2.	1.87	—6.5
do	3.	2.834	—5.9
do	2.	1.99	—.5
do	3.	3.	00.
Antiseptic mercuric chlorid	.82	1.37	+67.
Citric acid	.80	.63	—21.
Antiseptic mercuric chlorid	.82	1.882	+130.
Citric acid	.87	.893	+2.6
Aspirin	2.	1.93	—3.5
do	5.	5.05	+1.
do	5.	4.9	—2.
do	5.	4.77	—4.6
do	3.	1.76	—41.
do	5.	4.9	—2.
do	5.	4.4	—12.
do	5.	4.6	—8.
do	5.	4.16	—17.
do	3.	2.4	—20.
do	5.	4.9	—2.

TABLE X.—(*Continued.*)

Product.	Amount declared.	Amount found.	Variation.
	Grains.	*Grains.*	*Percent.*
Aspirin	5.	4.8	—4.
do	5.	4.4	—12.
do	5.	3.5	—30.
do	5.	3.7	—26.
do	5.	5.	00.
do	5.	5.	00.
do	5.	4.8	—4.
do	5.	4.7	—6.
do	5.	4.95	—1.
do	5.	4.7	—6.
Bismuth subnitrate	.1	.22	+120.
and calomel	.1	.19	+90.
Caffein	.5	.22	—56.
do	.5	.22	—56.
do	1.	.8269	—17.3
Caffein, citrated	1.	.80	—20.
do	1.	.47	—53.
do	2.	.69	—65.
do	1.	.92	—8.
do	.166	.145	—10.
do	1.	.87	—13.
do	1.	.955	—4.5
do	1.	.47	—53.
do	1.	.986	—1.4
do	1.	.865	—13.5
Calomel	1.	.944	—6.
and sodium bicarbonate	1.	.923	—8.
Calomel	1.	.97	—3.
and sodium bicarbonate	1.	.93	—7.
Calomel	1.	.74	—26.
and sodium bicarbonate	.5	.22	—56.
Calomel	.5	.6	+20.
and sodium bicarbonate	.5	.57	+14.
Calomel	1.	.93	—7.
and sodium bicarbonate	1.	.91	—9.
Calomel	1.	.99	—1.
and sodium bicarbonate	1.	.93	—7.
Calomel	1.	.7	—30.
and sodium bicarbonate	1.	1.01	+1.0
Calomel	1.	1.06	+6.0
and sodium bicarbonate	1.	1.05	+5.0
Calomel	1.	.89	—11.
and sodium bicarbonate	1.	.98	—2.
Calomel	1.	.9	—10.
and sodium bicarbonate	1.	.9	—10.
Calomel	1.	1.01	+1.0
and sodium bicarbonate	1.	.95	—5.
Calomel	1.	1.16	+16.
and sodium bicarbonate	1.	1.23	+23.
Calomel	1.	1.07	+7.0
and sodium bicarbonate	1.	.99	—1.
Calomel	.5	.5	0.
and sodium bicarbonate	.5	.48	—4.
Calomel	1.	1.	0.
and sodium bicarbonate	1.	1.06	+6.0
Calomel	1.	1.05	+5.0
and sodium bicarbonate	1.	.98	—2.
Calomel	1.	1.11	+11.
and sodium bicarbonate	1.	.95	—5.

TABLE X.—(*Continued.*)

Product.	Amount declared.	Amount found.	Variation.
	Grains.	*Grains.*	*Percent.*
Calomel	1.	.82	—18.
and sodium bicarbonate	1.	1.16	+16.
Calomel	1.	1.01	+1.
and sodium bicarbonate	1.	.98	—2.
Calomel	1.	1.03	+3.0
and sodium bicarbonate	1.	.85	—15.
Calomel	1.	1.015	+1.5
and sodium bicarbonate	1.	.98	—2.
Calomel	1.	.99	—1.
do	2.	.97	—51.
do	1.	1.16	+16.
do	1.	1.08	+8.0
do	.1	.096	—4.
do	1.	1.07	+7.0
do	1.	1.07	+7.0
do	1.	.89	—11.
do	.1	.125	+25.
Codein	.5	.489	—22.
do	.5	.314	—37.
do	.25	1/6	—33.
Corrosive sublimate	7.3	7.438	+1.9
do	1.8	2.047	+13.7
do	7.3	7.01	—4.0
do	1.82	1.74	—4.4
do	7.5	7.016	—6.4
do	1.75	1.553	—11.2
do	1.75	1.345	—23.1
do	7.3	8.170	+11.9
do	7.3	7.395	+1.3
do	7.3	7.396	+1.3
do	7.5	7.490	—.1
do	7.5	7.510	+.1
do	1.75	1.634	—6.6
do	7.3	6.974	—4.5
do	7.3	6.360	—12.9
do	7.0	6.897	—1.4
do	1.74	1.840	+5.7
Formin	5.	4.79	—4.2
do	5.	5.032	+.6
Grip:			
Acetanilid	2.5	2.380	—4.8
Ammonium salicylate	2.5	2.397	—4.1
Caffein, citrated	.5	.526	+5.
Heroin	.1	1/16	—37.
Heroin hydrochlorid	1/24	1/30	—20.
do	1/12	.0725	—13.
do	1/24	1/30	—20.
Hexamethylene	5.	4.9	—2.
do	5.	4.95	—1.
Hexamethyleneamin	5.	4.91	—2.
Hexamethylenetetramin	2.	2.25	+12.5
do	5.	4.51	—9.8
do	5.	4.813	—4.
do	5.	5.116	+2.3
do	5.	4.998	—.04
do	5.	5.043	+.86
do	5.	4.958	—.8
Migraine:			
Acetanilid	2.	1.85	—7.5
Caffein	.25	.27	+8.0

TABLE X.—(*Continued.*)

Product.	Amount declared.	Amount found.	Variation.
	Grains.	*Grains.*	*Percent.*
Migraine:			
Acetanilid	2.5	2.326	—7.
Sodium salicylate	1.	.914	—8.6
Migraine:			
Acetanilid	2.5	2.144	—14.2
Sodium salicylate	1.	.874	—12.8
Migraine:			
Acetanilid	2.	1.827	—8.6
Caffein, citrated	.5	.45	—10.
Migraine No. 1:			
Acetanilid	2.	1.955	—2.25
Caffein, citrated	.5	.512	+2.4
Morphin sulphate	.25	.225	—10.
do	1/6	.137	—18.
do	1/6	.199	+19.4
Myalgic (Dr. Woodward):			
Acetanilid	2.	1.843	—7.8
Sodium salicylate	2.	1.831	—8.4
Caffein	.5	.514	+3.
Nux vomica	1.	1.1	+10.
do	.25	.25	0.
do	.1	1/11	—10.
do	.25	.145	—41.
do	.25	1/6	—33
do	.25	.25	0.
do	.5	.46	—8.
do	.25	.125	—50.
Phenacetin	5.	3.90	—22.
do	3.	2.35	—21.6
do	3.	2.83	—5.6
Quinin sulphate	2.	1.76	—12.
do	2.	1.77	—11.5
do	2.	2.04	+2.0
do	2.	1.92	—4.
do	2.	1.94	—3.0
do	2.	1.92	—4.
do	2.	1.88	—6.
do	2.	1.83	—8.5
do	3.	2.92	—2.6
do	3.	2.3	—23.
do	2.	1.97	—1.5
Rheumatic (Dr. Lord):			
Sodium salicylate	5.	1.592	—68.
Codein sulphate	1/16	None	—100.
Rheumatic No. 4:			
Sodium salicylate	7.5	6.47	—13.7
Sodium bicarbonate	2.	1.48	—26.0
Rheumatic No. 6:			
Sodium salicylate	5.	3.564	—28.7
Codein sulphate	1/16	.0298	—52.
Rheumatic No. 6:			
Codein sulphate	1/16	.059	—5.6
Sodium salicylate	5.	4.779	—4.4
Salol	2.5	2.26	—9.6
do	2.5	2.32	—7.2
do	5.	4.27	—14.
do	2.5	2.32	—10.8
do	1/6	.14	—16.
do	2.5	2.23	—7.
do	5.	4.88	—2.4

TABLE X.—(*Continued.*)

Product.	Amount declared.	Amount found.	Variation.
	Grains.	*Grains.*	*Percent.*
Salol	2.5	2.41	—4.
do	2.5	1.80	—28.
do	5.	4.77	—4.6
do	5.	3.80	—24.
do	2.5	1.94	—22.4
do	2.5	2.96	+18.4
do	2.5	2.24	—10.4
do	5.	4.804	—3.9
do	5.	4.66	—6.8
do	2.5	2.288	—8.48
do	2.5	2.522	+1.
do	2.5	2.38	—4.8
do	2.5	2.05	—18.
do	2.5	2.36	—5.6
do	2.5	2.30	—8.
do	5.	4.43	—11.4
Sodium salicylate	3.	1.82	—39.
do	5.	4.59	—8.2
do	3.	3.08	+3.
do	5.	3.445	—31.
do	5.	4.88	—2.4
do	5.	4.85	—3.
do	5.	4.85	—3.
do	5.	4.78	—4.4
do	5.	4.40	—12.
do	5.	3.745	—25.
do	3.	2.91	—3.
do	5.	4.75	—5.
do	5.	4.45	—11.
do	5.	4.24	—15.2
do	5.	4.766	—4.8
do	5.	4.437	—11.2
do	3.	2.60	—13.
do	5.	4.57	—8.6
do	5.	4.855	—2.9
do	5.	3.23	—35.4
do	3.	2.82	—6.
do	5.	4.6	—8.
do	5.	4.871	—2.6
do	5.	4.91	—1.8
Strychnin nitrate	1/50	1/48	+4.
do	1/40	1/49	—18.4
do	1/40	1/41	—2.5
do	1/40	1/47	—15.
do	1/40	1/38	+5.
Strychnin sulphate	1/40	1/28	+42.
do	1/40	1/38	+5.
do	1/40	1/53	—24.
do	1/40	1/56	—29.
do	1/40	1/43	—7.0
do	1/40	1/41	—2.5
do	1/40	1/39	+2.5
do	1/50	1/46.3	+8.
do	1/50	1/58	—14.
do	1/40	1/39	+2.5
do	1/40	1/39.5	+1.
do	1/40	1/37	+8.1
Sulphonethylmethane	5.	4.83	—3.4
Trional	5.	2.72	—45.6
Zinc phenolsulphonate	5.	3.64	—27.4

SUMMARY OF ANALYTICAL RESULTS, EXCEPTING NITROGLYCERIN TABLETS.

Number of samples of tablets examined	324
Number of determinations made	449
Percenage exceeding 10 percent above or below declaration	36.7
Percentage exceeding 12 percent above or below declaration	30.9
Percentage exceeding 15 percent above or below declaration	24.5
Percentage exceeding 20 percent above or below declaration	17.8

	Number	Percentage
Variations below declaration	343	76.4
Variations above declaration	94	20.9
Products in accord with declaration	12	2.7
Variations more than 10 percent below declaration	142	31.6
Variations more than 10 percent above declaration	23	5.1
Variations more than 15 percent below declaration	94	20.9
Variations more than 15 percent above declaration	16	3.6
Variations more than 20 percent below declaration	69	15.4
Variations more than 25 percent above declaration	11	2.4

COMMENTS.

The variations are unexpectedly large both in numbers and amounts. The tablets examined are of relatively simple composition, and, for the most part, contain medicinal agents which can be readily estimated with a fair degree of accuracy. The tablets examined are fairly representative of all manufacturers In only a few factories were the finished tablets actually examined chemically. The best tablets were found in factories where competent chemical control exists. In fact, no excessive variations were found in several brands so supervised. A careful review of the tablets examined shows, with possibly a few exceptions, that all of the results should have fallen within 10 percent, either above or below, the declaration. To find over one-third exceeding this variation does not substantiate the old-time claims for accuracy and uniformity. Even on a 15 percent basis nearly one-fourth are wanting. There is no reasonable excuse for such deviations, for example, as the presence of twice as much corrosive sublimate as claimed. This simply shows gross carelessness and incompetence. It will also be observed that a much larger number of the results fall below the amounts declared than above. The methods of analyses may contribute to this in a few instances. It is claimed that this is the safest side to err on, but the factor of safety is frequently too liberal, for example, 20 percent or more below claim in simple tablets of acetanilid or acetphenetidin or aspirin savors either of gross carelessness or design. It should be noted that since this investigation was begun more competent control has been provided in a considerable number of establishments, and there are indications of general improvements.

TABLETS CONTAINING VOLATILE OR UNSTABLE AGENTS.

Although the tablets containing volatile or unstable drugs are comparatively small in number, they are sufficiently important to call for careful consideration. Agents coming under this classification are nitroglycerin, phenol, camphor, chloro-

form, ether, ammonium carbonate, various essential oils, etc. Except in a few cases the amount of work done is inadequate to warrant conclusions, but it is well known that medication of this character is difficult to prepare and keep. It is furthermore common knowledge that the fact that the tablets are right at the outset is no proof that they will long remain so. Medical men should not resort to such uncertain medication, as it reflects discredit upon the profession and tends toward drug nihilism. The writer has in his possession tablets containing camphor which is sublimed on the sides of the bottle. They are no longer suitable medicines. In the case of essential oils there is often only sufficient present to impart a flavor. The phenol variability has been pointed out by Puckner and Clark,[1] and Puckner and Hilpert.[2]

In the present investigation nitroglycerin tablets, for various reasons, received chief consideration. Nitroglycerin is one of the most powerful heart remedies, and is depended upon by physicians in cases of emergencies which are sometimes of a very serious character. It has been reported from time to time that nitroglycerin tablets are of uncertain character, and that even though they are originally made with the proper quantity of nitroglycerin, it is impossible to state or represent how long they will remain so. This uncertainty of nitroglycerin tablets has been charged to the supposed volatility[3] of nitroglycerin. With this general knowledge available, whether correct or otherwise, it seems rather strange that some manufacturers should fill orders with nitroglycerin tablets made three or more years previously. Some manufacturers of deficient goods explained the shortage on the ground that the tablets had been on hand three, four or five years at the time the orders were filled. Yet in no instance did there appear any information on the packages to the effect that they were several years old. The packages, however, did bear the declaration that each tablet contained a given quantity of nitroglycerin. If such claims appear, they should be at least approximately correct. Such potent drugs should not be made on the hit or miss basis. A goodly number of the tablets on the market were purchased and examined, with the following results:

Results of Examination of Nitroglycerin Tablets.

Amount claimed. *Grains.*	Amount found (Nitrate method.) *Grains.*	Amount found (Nitrite method.) *Grains.*	Shortage. *Percent.*
0.005	0.0010	0.0011	80
.0020	.0017	.0008	91
.010	.010	.0098	0
.020	.015	.014	25
.020	.0050	.0045	75
.010	.004	.004	60
.020	.0012	.0011	94
.020	.008	.0073	60
.020	.009	.008	55
.020	.014	.0135	30
.020	.0096	.0108	46
.020	.0121	.0123	38

[1] J. Am. Med. Asso., 1908, *51*, 331.
[2] J. Am. Med. Asso., 1910, *55*, 2169.
J. Am. Med. Asso., 1911, *56*, 1344.
[3] H. Hager, Pharm. Centrh., 1877, *18*, 89.
J. M. Merrick, Am. J. Science and Arts, 1863, *36*, 212.

Amount claimed. *Grains.*	Amount found (Nitrate method.) *Grains.*	Amount found (Nitrite method.) *Grains.*	Shortage. *Percent.*
.020	.0108	.0117	41
.020	.0115	.0141	29
.020	.006	.006	70
.010	.0006	.0007	93
.010	.0076	.0082	18
.020	.0136	.0122	32
.010	.0093	.0086	7
.010	.0065	.0066	34
.010	.007	.0074	26
.010	.0026	.0026	74
.010	.0085	.009	10
.010	.0066	.006	34
.010	.008	.0083	58
.010	.0055	.0056	44
.020	.0074	.0087	56
.010	.007	.0077	23

It will be noted that the determinations made by two separate and distinct methods gave fairly concordant results. The shortages recorded are based upon the highest results obtained by either of the methods. The deficiencies found are abnormally large. Notwithstanding the general belief (which does not appear to be well founded) that nitroglycerin tablets are prone to deteriorate with age, it is reasonable to expect that they should possess at least 75 percent of the actual value claimed for them. It is furthermore believed that a 25 percent deficiency is excessive. Even on this basis a large majority (78 percent) are wanting. Over 42 percent exceed a 50 percent deficiency. During the interviews it developed that the tablets were not generally analyzed. The 10 percent nitroglycerin alcoholic solution and 10 percent nitroglycerin milk sugar triturations used were apparently accepted as represented in most instances without question. Various experiments were made to determine how rapidly nitroglycerin tends to volatilize at room temperature in a vacuum desiccator. The results seem to indicate that nitroglycerin is not as volatile as is believed by some. Experiments made with nitroglycerin tablets thus far show that some at least are fairly stable. The subject is, however, still under investigation.

It should be stated that after this paper was read, the writer's attention was called to a report of a "Committee of Chemists appointed to investigate the possible deterioration of drug extracts," which report was said to contain useful information on the stability of nitroglycerin tablets. After some correspondence a copy of this private publication, dated December 31, 1908, was received. The results recorded are herewith submitted:

Nitro-Glycerin Tablets.[1]

"We give below four samples assayed and re-assayed, and they do not seem to indicate any deterioration to amount to anything, and we know of no case of a nitro-glycerin tablet which failed to act physiologically, no matter how old it was. This seems to point to the fact that nitro-glycerin on milk sugar (which we know to be a good preservative and prevent oxidation quite largely) as it is used by physicians almost altogether, does not deteriorate appreciably with age."

Sample of Feb. 23, '05, of nitro-glycerin tablet, 1-25 grain; assayed May 31, '07, 1-30 grain
Sample of Apr. 17, '06, of nitro-glycerin tablet, 1-100 grain; assayed May 31, '07, 1-150 grain
Sample of Nov. 15, '06, of nitro-glycerin tablet, 1-50 grain; assayed May 31, '07, 1-80 grain
Sample of May 2, '07, of nitro-glycerin tablet, 1-100 grain; assayed May 31, '07, 1-100 grain

—A. R. L. DOHME.

Nitroglycerin.[2]

		Supposed Content.	Assay.	Age.
Tablet	Triturate No. 456	.0066 grain	.00679 grain	5 years
"	" No. 122	.010 "	.00979 "	1 "
"	" No. 123	.020 "	.0139 "	11 "
"	" No. 123	.020 "	.0264 "	9 "
"	" No. 123	.020 "	.0254 "	7 "
"	" No. 618	.010 "	.007 "	8 "
C. C. Tablet	No. 108	.010 "	.0098 "	10 "
" "	No. 108	.010 "	.0084 "	10 "
" "	No. 108	.010 "	.0098 "	9 "
G. C. Pill	No. 423	.030 "	.029 "	5 "
" "	No. 423	.030 "	.010 "	8 "
" "	No. 423	.030 "	.014 "	8 "

—J. M. FRANCIS.

CONCLUSIONS.

1. Tablets are not as uniform and accurate as is generally believed.

2. There is little difference between the uniformity of the larger tablets produced by the single or multiple vertical punch or the rotary machines.

3. The vertical single punch delivers more uniform hypodermic tablets and so-called compressed tablet triturates.

4. There does not appear to have been much advancement in the manufacture of uniform tablets during the past twenty years, even though the machinery has been materially improved.

5. The number of tablets produced from a given quantity of material should not vary to exceed 5 percent from the number calculated.

6. The variation in weight of tablets should not exceed 8 percent, either above or below the average.

7. The variation from the declaration should not exceed 10 percent in the average tablet or tablets of a fairly simple composition.

8. In complex, very small and difficult tablets to manufacture the variation from the declaration may be as great as 15 percent.

9. Volatile agents should not be compressed into tablet form, excepting flavoring agents and possibly nitroglycerin under strict control.

10. The amount of talcum used should not exceed 5 percent.

11. Fillers such as fuller's earth, chalk, gypsum, terra alba, kaolin, etc., should not be used.

12. No insoluble or non-disintegrable tablets should be placed on the market.

METHODS OF ANALYSIS.

INTRODUCTION.

The methods given here have not reached the stage where improvement is impossible. They are offered as a basis for future work, and it is hoped that all interested in this line of analysis will not only assist in trying out and improving these methods but will devise new ones as time and opportunity permit.

The work in this article has been restricted to uncoated tablets. Some of the methods, however, will undoubtedly give satisfactory results not only with uncoated but with many coated tablets as well. Some skill and adaptation may be

[1] Report of Committee of Chemists, 1908, p. 4.
[2] Report of Committee of Chemists, 1908, p. 16.

necessary with the latter products. A casual review of the ingredients used medicinally and in giving form to tablets shows that extreme care must be exercised in devising analytical methods which will insure accuracy and reliability. The majority of compressed tablets containing insoluble agents usually contain starch, gummy material and some lubricant. Soluble chemicals are frequently compressed without excipient. Lubricants are, however, often employed. Molded tablets generally contain either sugar of milk or sucrose, or both, as a base. Some disturbing features are liable to creep in with the utmost circumspection. Checking and counter checking must be employed frequently. The chemical reagents used must be carefully tested. In preparing granulations the process may be such as to occlude some of the medicinal agents so that it is very difficult to remove them completely with the ordinary solvents from the powdered material. For example, if in the manufacture of caffein tablets starch paste is used, some of the caffein may be dissolved and intermixed with the starch paste which on drying, envelopes the caffein and thus makes it very difficult to remove. In fact, in some instances it is virtually impossible to remove it completely. Starch and gummy material are great handicaps in formulating simple methods of analysis.

The analyst in the factory has a distinct advantage over the chemist not so connected. The former knows or can ascertain what breakers are ahead and may thus avoid them. Not so fortunate, however, is the chemist who simply has the tablets placed before him for analysis. For example, the factory chemist examines a sample of tablets and finds the results abnormal. He is unable to explain the difficulty, but the perplexity is readily solved when he calls for and receives the working formula. The analyst who has only the tablets to work from must depend upon his own ingenuity to solve and overcome various difficulties and it must be admitted that some of them may never be solved.

GENERAL METHODS.

WEIGHT OF TABLETS.

Weigh separately from ten to twenty-five tablets in order to ascertain the average weight and the variation from the average.

PREPARATION OF SAMPLE.

In a mortar, or other suitable apparatus, finely powder from ten to twenty-five or more tablets, mix thoroughly and introduce the powder into a weighing tube for future use. This procedure is not applicable to tablets containing volatile agents. It is of the utmost importance to powder finely and prepare a uniform sample.

DETERMINATION OF MOISTURE.

The amount of moisture may be determined in tablets containing non-volatile drugs by drying the powder in a vacuum (not less than 25 inches) at a temperature not exceeding 75° C. or in a hot water heated oven, to constant weight. These methods do not always give the same identical results, but they are sufficiently concordant for practical purposes.

DETERMINATION OF ASH.

Ignite a small portion at a dull red heat until the residue is white or gray, cool in a desiccator and weigh. Best results are secured in a well regulated muffled furnace. Flat platinum dishes are frequently used for this purpose The analyst should, however, never employ a platinum dish for ashing drugs unless he knows there is nothing present which will injure the platinum. It is always safest to use porcelain or silica dishes. Hoskin's electric furnace is well suited for ashing.

ATOMIC WEIGHTS.

The international atomic weights for 1914[1] (oxygen, 16) are used in all calculations excepting methods of analysis in Bulletin No. 107 (revised). For Pharmacopœial articles (Eighth Decennial Revision) the atomic weights recognized by that authority (hydrogen, 1) must be used.

SPECIAL METHODS.[2]

The methods given below are designed chiefly for determining the active medicinal ingredients. No claims for complete analysis are made, but in some cases the examinations are made as complete as practicable with present experience.

ACETANILID TABLETS.

Acetanilid, Method A: Place from ½ to 1 gram of the finely powdered material on small, double counterpoised filters, one within the other, in a funnel, and treat with successive portions of chloroform until all of the acetanilid is removed. From 40 to 60 cc. are generally sufficient. The solvent must be carefully applied, best from a pipette, not only to the powder directly, but to the sides and upper edges of the filters. Each addition should be allowed to drain before more solvent is used. When exhausted, wash the stem of the funnel with chloroform, collect the filtrate and washings in a tared Jena or non-sol beaker,[3] evaporate carefully at a slightly elevated temperature or in a current of air until the solvent is apparently dissipated, add 5 cc. of ether, evaporate, then heat for 15 minutes at about 100° C., cool in a desiccator and weigh.

Comments: The chloroform will remove certain lubricants such as "white oil," cocoa butter, stearic acid, and, if present, will be found with the acetanilid residue. The amounts are, however, usually so small that they may be disregarded for practical purposes. This observation is applicable to other determinations where the same or similar conditions obtain. A Gooch crucible may be used to advantage in place of the filter papers.

Purity of acetanilid: The purity of the acetanilid can be determined by the Pharmacopœial standard for this drug. The most important single observation is the melting temperature. Pure, dry acetanilid melts at from 111° to 113° C. If there is not sufficient material, a larger amount of the powder may be extracted. Occasionally artificially colored tablets are encountered. In such cases the chloroformic residue may be correspondingly colored, but the amount of color dissolved is generally negligible.

[1] J. Am. Chem. Soc., 1913, *35*: 1809; Drug. Circ., 1914, *58*: 28.
[2] With the collaboration of W. O. Emery, E. C. Merrill, A. G. Murray and S. Palkin.
[3] These beakers should be used in all similar determinations.

Acetanilid, Method B: If the acetanilid should prove impure, proceed by method A above, except collect the filtrate into a 200 cc. Erlenmeyer flask, distill to about 10 cc., add 20 cc. dilute sulphuric acid (10 percent) and digest on steam bath until the liquid is reduced to about 15 cc. and the chloroform is removed, then add 20 cc. of water, continue digestion until solution is reduced to about 15 cc., again add 20 cc. of water, continue digestion until solution is reduced to about 10 cc., finally add 40 cc. water and 15 cc. concentrated hydrochloric acid, and titrate with standard potassium bromid-bromate solution (Koppeschar's solution) until a slight yellowish color persists.

Comments: The first part of this procedure is for the purpose of converting the acetanilid into anilin sulphate and dissipating the acetic acid. The yellowish color is due to a slight excess of bromin. While adding the reagent the flask should be repeatedly rotated to agglutinate the precipitated tribromanilin formed. Should the amount of acetanilid be large and the tribromanilin precipitate too bulky, it may be necessary to dilute the anilin sulphate solution more and even titrate an aliquot part of the solution. If there is any probability of the chloroform dissolving sufficient water to carry appreciable amounts of associated bodies, the chloroform extracts should be collected in a second separatory funnel and washed with 15 or 20 cc. of water, then transferred to the Erlenmeyer flask and proceeded with as directed above. This observation should be borne in mind while working with various mixtures.

Potassium bromid-bromate solution: Dissolve 50 grams of potassium hydroxid in 50 cc. of water, add bromin, at ordinary temperature, to slight excess, dilute to 500 cc., heat to expel excess of bromin, filter, and make up to a liter. The solution is standardized against acetanilid and should be diluted so that each cc. represents about 0.01 gram of acetanilid.

Reactions involved in preparing potassium bromid-bromate solution and in determining the acetanilid by method B:

$$6KOH + 3Br_2 = 5KBr + KBrO_3 + 3H_2O$$

$$5KBr + KBrO_3 + 6HCl = 3Br_2 + 6KCl + 3H_2O$$

$$2C_6H_5NHCH_3CO + H_2SO_4 + H_2O = (C_6H_5NH_2)_2\,H_2SO_4 + 2CH_3COOH$$

$$(C_6H_5NH_2)_2\,H_2SO_4 + 6Br_2 = C_6H_2Br_3NH_2 + 6HBr + H_2SO_4.$$

Residue insoluble in chloroform: The total residue can be ascertained indirectly by deducting the amount of acetanilid obtained from the original weight taken. It may also be determined as follows: (a) Expose filters and contents in a protected place to the atmosphere for 24 hours, then weigh, using outer filter as counterpoise. (b) Heat filters containing the residue at 100° C. for one-half hour, cool in desiccator, and weigh, using outer filter as counterpoise. This gives residue on a moisture-free basis. Suitable calculations must be made to reduce data to uniform basis.

Comments: The residue of compressed acetanilid tablets consists essentially of starch, adhesive matter and inorganic lubricant, but in the case of molded tablets it consists chiefly of milk sugar.

The kind of starch may be determined by means of a microscope. The amount of starch may be estimated by the official method described in Bulletin 107 (revised) Bureau of Chemistry, p. 53, beginning at the point where the insoluble

residue is introduced into the refluxing flask and heated with 200 cc. of water and 20 cc. of hydrochloric acid.

Ash: Proceed as directed by general method for ash. The inorganic matter should consist essentially of talcum, but occasionally some "filler" is met.

ACETANILID COMPOUND.

Tablets bearing this name should contain as medicinal agents, acetanilid, caffein, and sodium bicarbonate, together with the ingredients usually employed in preparing tablet medication. The caffein and acetanilid of this mixture may be extracted from a neutral, an alkaline or acid aqueous solution with chloroform.

Caffein: Place about 1 gram, accurately weighed, into a separatory funnel[1] (A), add 25 cc. chloroform, shake well, add 25 cc. water and sufficient dilute sulphuric acid to render distinctly acid, agitate thoroughly and set aside for the chloroform to separate and clear. Transfer the chloroform to a 200 cc. Erlenmeyer flask through a small, dry filter. Repeat this operation with the same amount of chloroform three or four times, or until exhaustion is complete. Distill the chloroform gradually as the extraction proceeds to about 10 cc. finally. Then add 20 cc. of dilute sulphuric acid and continue distillation until all the chloroform is removed, transfer flask to steam bath and digest mixture until contents of flask are reduced to about 10 cc., add 20 cc. water and continue digestion until liquid amounts to about 10 cc.; cool, transfer to separatory funnel (B) with sufficient water to make about 25 cc. Exhaust with successive portions of chloroform (25 cc.) until all the caffein is removed. The chloroformic extractions can be evaporated in a tared beaker at a low temperature or the chloroform may be distilled from a flask to about 10 cc., then transferred with washings to a tared beaker and evaporated spontaneously or at a low temperature in a current of air. When apparently dry, cool, add 5 cc. of ether and evaporate carefully to avoid loss of caffein by crepitation, finally dry at 80° C. for one-half hour, cool in desiccator and weigh.

Comments: Test purity by U. S. P. standard for caffein. Unless extreme care is exercised the results will be low, due to incomplete extraction, creeping, etc. In this operation the acetanilid is converted into anilin sulphate, which, like many alkaloidal salts, is insoluble in chloroform and other immiscible solvents and, therefore, remains in the solution from which the caffein has been extracted.

Acetanilid: Transfer aqueous solution in separatory funnel (B) containing the anilin sulphate to an Erlenmeyer flask, wash the separatory funnel (B) and the filter used for filtering chloroformic solution of caffein above with two successive portions (15 and 10 cc.) of water, and also introduce these washings into the flask. Heat flask containing the anilin sulphate a short time to expel the chloroform, add 15 cc. of concentrated hydrochloric acid, then introduce slowly a standard potassium bromid-bromate solution, with agitation, until a distinct yellow color persists. The amount of acetanilid can readily be determined from the number of cubic centimeters of standard solution used. See comments for acetanilid under acetanilid tablets.

Sodium Bicarbonate, Method A: Introduce into a suitable dish from ½ to 1 gram of the material, incinerate at a dull, red heat, until all organic matter is

[1]The joint should be moistened with a drop of water to prevent leakage of chloroform.

destroyed and the residue is white, or nearly so; cool, dissolve the residue in water, add sufficient but a known amount of standard sulphuric acid to decompose the carbonate, then titrate back the excess of acid with standard potassium hydroxid solution, using methyl orange as indicator. Calculate results to sodium bicarbonate.

Comments: If the mixture is heated to fusion any talcum that is present may be disintegrated and the results obtained abnormal. This procedure is applicable only in special cases.

Reactions: $2\,NaHCO_3 + Heat = Na_2CO_3 + H_2O + CO_2$

$Na_2CO_3 + H_2SO_4 = Na_2SO_4 + H_2O + CO_2$

One cubic centimeter of normal sulphuric acid is the equivalent of 0.084 gram of sodium bicarbonate.

Sodium Bicarbonate, Method B: This chemical may be accurately determined by treating the mixture with 20 percent hydrochloric acid and absorbing the carbon dioxid evolved. About 2 grams of the material should be used. A detailed method with illustrated apparatus will be found on pages 169 and 170 of Bulletin 107 (Revised), Methods of Analysis, Bureau of Chemistry.

Comments: This method may be used in all cases where no other method is given.

Talcum, etc.: Introduce into a previously heated, cooled and weighed Gooch crucible provided with an asbestos mat about 1 gram, accurately weighed, of the powder; treat with sufficient warm water at about 40° C. to remove the sodium bicarbonate, etc., wash with 25 cc. alcohol, incinerate to white ash, cool in desiccator and weigh. The powder may be disintegrated in a beaker with water at about 40° C., then transferred to crucible and finished as above.

Comments: This procedure will include not only talcum but other insoluble, inorganic, non-volatile matter which may be added in the form of a filler or otherwise.

This general procedure may be used unless some non-volatile or insoluble (in water or alcohol) inorganic medicinal agent is present and should be applied when no other method is given.

Starch: Weigh into a 200 cc. beaker a suitable quantity, 2½ to 3 grams, of the dry material, add 50 cc. of alcohol, mix thoroughly, allow to stand a short time, transfer to filter and wash with about 200 cc. of lukewarm water, puncture the bottom of the filter, wash the residue into a 500 cc. flask with water, and make the volume up to 200 cc. with water, add 20 cc. of hydrochloric acid, specific gravity 1.125, attach flask to reflux condenser and heat for two and a half hours. Cool and nearly neutralize with sodium hydroxid, make volume up to 250 cc., filter and determine the dextrose in an aliquot part of the filtrate as directed in Methods of Analysis, Bulletin 107 (revised), page 49, section (b).

Comments: This method is of general application for ordinary starch, but is not suited for estimating soluble starch. Table for calculating dextrose will be found in Bulletin 107. Starch is present in virtually all tablets containing insoluble drugs and should be determined by this method.

ACETANILID COMPOUND WITH CITRIC ACID.

Citrated caffein is sometimes used in place of the alkaloid caffein. Some manufacturers seem to forget that there is a difference between the two products and furthermore they do not appear to know that this product should consist approximately of equal parts of caffein and citric acid. All of the ingredients present in these tablets excepting citric acid may be determined by methods given under acetanilid compound.

Citric acid: If there is no disturbing factor present, the acid can be titrated directly, but usually sodium bicarbonate is present in these mixtures and frequently sufficient moisture to induce some reaction with the citric acid forming a little sodium citrate. Several methods have been tried, but the results have not been concordant. Methods tried were: Extraction with absolute alcohol and titration; precipitation as barium citrate in 50 percent alcohol; and dissolving in water, acidulating with dilute hydrochloric acid, filtering, evaporating the filtrate to dryness and eliminating all free hydrochloric acid, then titrating with a standard alkaline solution.

Comments: The amount of citric acid present as citrated caffein can be ascertained approximately from the caffein found. The latter is the basis of the caffein citrate reported in this paper.

ACETANILID COMPOUND WITH CODEIN.

The term "codein" has come through lax usage to mean either the alkaloid, sulphate or phosphate. Strictly speaking, it means the alkaloid only and not any of its derivatives. The amount of sulphate or phosphate of this alkaloid present is usually small.

Caffein and acetanilid: Proceed as directed under acetanilid compound.

Codein: The acidulated solution in the separatory funnel from which the caffein and acetanilid have been extracted is rendered alkaline with potassium hydroxid. The liberated codein is extracted with successive portions of chloroform (15 cc. each), and the chloroformic solution filtered through a dry filter into a tared dish. The chloroform is then evaporated, the residue dried on a steam bath, cooled in a desiccator and weighed.

Comments: This gives anhydrous codein, $C_{18}H_{21}NO_3$. The purity of the codein may be determined by submitting it to the Pharmacopœial test prescribed for this drug. The amount and purity may also be checked by dissolving the codein in an excess of tenth normal sulphuric acid and titrating back the excess of acid with fiftieth normal potassium hydroxid, using methyl red as indicator. One cc. of tenth normal sulphuric acid is the equivalent of 0.031719 gram of crystallized codein, 0.0393 gram codein sulphate and 0.0433 gram codein phosphate.

If the insoluble matter should cause any difficulty, the solution may be filtered, the separatory funnel and filter washed, and all collected into another separatory funnel, then extracted as before directed.

The amount of codein found, if present in the form of sulphate or phosphate, may be checked by determining the amount of sulphate or phosphate present in the mixture, provided no other sulphate or phosphate is present.

ACETANILID COMPOUND WITH QUININ.

The quinin in this mixture is usually present in the form of sulphate. The compound may be analyzed as directed for acetanilid compound with codein.

Comments: This procedure gives anhydrous quinin. One cubic centimeter of tenth normal sulphuric acid is the equivalent of 0.037826 gram of U. S. P. quinin or 0.0436 gram quinin sulphate.

ACETANILID COMPOUND WITH SODIUM BROMID.

Caffein and acetanilid: Proceed as directed under acetanilid compound for these two chemicals except that the aqueous solution is rendered alkaline with either sodium or potassium hydroxid (free from chlorid) instead of acid.

Sodium bromid: Acidulate the solution remaining after removing the caffein and acetanilid with dilute nitric acid. Dilute to about 100 cc., filter, wash separatory funnel and filter paper with water and collect filtrate and wash in suitable beaker. The volume should finally amount to about 150 cc. Add tenth normal silver nitrate solution in excess to precipitate the bromin as silver bromid. Then add 1 cc. of ferric ammonium sulphate solution (10 percent) and titrate back the excess of silver nitrate with tenth normal solution of potassium thiocyanate. From the amount of tenth normal silver nitrate solution used the quantity of sodium bromid present in the mixture can readily be calculated.

Comments: In case the mixture is of such a character as to permit titration with silver nitrate without filtering, this part of the method may be omitted. One cubic centimeter of tenth normal silver nitrate is the equivalent of 0.010292 gram sodium bromid.

Reactions: $NaBr + AgNO_3 = AgBr + NaNO_3$

$AgNO_3 + KCNS = AgCNS + KNO_3$

$6KCNS + Fe_2(NH_4)_2(SO_4)_4 = Fe_2(CNS)_6 + (NH_4)_2SO_4 + 3K_2SO_4$.

ACETANILID COMPOUND WITH SODIUM SALICYLATE.

Caffein and acetanilid: Proceed as directed under acetanilid compound with sodium bromid for determining caffein and acetanilid.

Sodium salicylate: Acidulate solution in separatory funnel, from which the caffein and acetanilid have been extracted, with dilute hydrochloric acid, remove the liberated salicylic acid with successive portions of chloroform. Transfer the chloroformic extract containing the salicylic acid into a tared beaker through a filter paper. Evaporate the chloroform at low temperature in a current of air, to avoid loss of any salicylic acid by volatilization. Finally, dry at 80° C., transfer to desiccator, cool, and weigh. From the amount of salicylic acid obtained by this operation the quantity of sodium salicylate in the mixture can be readily calculated.

Comments: The purity and the quantity of the salicylic acid can be determined by titrating the residue with tenth normal potassium hydroxid, using phenolphthalein as indicator. One cubic centimeter of tenth normal potassium hydroxid is the equivalent of 0.0138048 gram of salicylic acid or 0.0160 gram sodium salicylate.

Sodium bicarbonate: Proceed by method B under acetanilid compound.

Sodium bicarbonate and sodium salicylate: The total amounts of sodium bicarbonate and sodium salicylate in this way can be checked by incinerating a given weight of the material at a dull, red heat, dissolving the residue in water and titrating the sodium carbonate formed with standard sulphuric acid, using methyl orange as indicator. The total sodium carbonate so obtained should be equal to the amount of sodium carbonate that can be produced by incinerating the sodium bicarbonate and sodium salicylate.

Reactions: $NaHCO_3 = Na_2CO_3 + H_2O + CO_2$

$2NaC_6H_4(OH)CO_2 + 14O_2 = Na_2CO_3 + 5H_2O + 13CO_2$

$NaCO_3 + H_2SO_4 = Na_2SO_4 + H_2O + CO_2$.

One cubic centimeter of normal sulphuric acid is the equivalent of 0.084 gram sodium bicarbonate and 0.160 gram sodium salicylate.

ACETPHENETIDIN TABLETS.

Acetphenetidin: This chemical may be determined by Method A for estimating acetanilid in acetanilid tablets. The purity of the acetphenetidin is determined by the standard prescribed for this product by the Pharmacopœia. The melting temperature is from 134° to 135° C.

ACETPHENETIDIN AND CAFFEIN.

Acetphenetidin and caffein: Remove these chemicals from the mixture by the method for extracting acetanilid and caffein under acetanilid compound, transfer chloroformic solution to tared beaker, evaporate at room temperature in current of warm air, treat residue with 5 cc. of ether (which is rapidly dissipated at room temperature, heat to 80° C. for a short time, transfer to desiccator, cool and weigh. This gives the total acetphenetidin and caffein.

Caffein: Determine caffein by method for caffein under acetanilid compound.

Acetphenetidin: Deduct the amount of the caffein found from the combined weight of acetphenetidin and caffein, which gives acetphenetidin.

Comments: Acetphenetidin is not as readily hydrolyzed as acetanilid. For this reason especial care should be exercised to see that all particles of the acetphenetidin are dissolved in the acid solution by repeated rotation of the flask If hydrolysis is incomplete the acetphenetidin will be extracted with the caffein and vitiate the results.

AMMONIUM CHLORID.

Ammonium chlorid, Method A: Dissolve a suitable amount in 50 cc. of water, acidulate with nitric acid, add an excess of tenth normal silver nitrate and titrate back with tenth normal potassium sulphocyanate, using 1 cc. of ferric ammonium sulphate solution (10 percent) as indicator.

Comments: For parallel reaction see ammonium bromid under acetanilid compound with sodium bromid. One cubic centimeter of tenth normal silver nitrate is the equivalent of 0.00535 gram of ammonium chlorid.

Ammonia gas (NH_3), Method B: Introduce about 1 gram of the material into a 500 cc. Kjeldahl flask, add 200 cc. of water and 15 cc. of a saturated solution of sodium hydroxid, and a few grains of granulated metallic zinc, No. 20, fine. Then distill the mixture until all of the ammonia gas has passed over.

Collect the distillate in a flask containing standard sulphuric acid. Sufficient liquid should be present in the flask receiving the distillate to cover the lower end of the condenser. Titrate back the excess of sulphuric acid, using cochineal as indicator. From the quantity of sulphuric acid consumed the ammonia gas can be readily calculated and from this the ammonium chlorid. The amount of ammonium chlorid obtained by this process should agree with the amount of ammonium chlorid obtained by the chlorid determination.

Comments: One cubic centimeter of normal sulphuric acid is the equivalent of 0.017034 gram of ammonia gas (NH_3) and 0.0535 of ammonium chlorid. In order to guard against any of the caustic alkali being carried over mechanically in the process of distillation, it will be necessary either to introduce a trap or incline the flask. This is a general method to be used for all ammonia compounds unless otherwise directed. The metallic zinc is added to minimize or prevent bumping.

Reactions: $NH_4Cl + KOH = NH_3 + KCl + H_2O$

$2\,NH_3 + H_2SO_4 = (NH_4)_2\,SO_4$.

Method C: Introduce 5 cc. of formaldehyde solution (37 percent) into a beaker containing 50 cc. of water, add a few drops of phenolphthalein solution and sufficient sodium hydroxid solution to render this mixture neutral, then add from ½ to 1 gram of the material to be tested, bring the mixture to boiling and titrate acid formed with semi-normal sodium hydroxid solution.

Reaction: $4NH_4Cl + 6CH_2O = 4HCl + C_6H_{12}O_4 + 6H_2O$

$HCl + NaOH = NaCl + H_2O$.

One cubic centimeter of normal sodium hydroxid is the equivalent of 0.0535 gram of ammonium chlorid.

Talcum, etc.: Incinerate a convenient quantity in a suitable crucible.

AMMONIUM CHLORID AND CODEIN.

Ammonium Chlorid: Proceed as under ammonium chlorid.

Codein: Introduce about 1 gram accurately weighed into separatory funnel, dissolve in 25 cc. of water, render alkaline and finish operation as directed for codein under acetanilid compound with codein.

AMMONIUM SALICYLATE.

Salicylic acid: Introduce from ½ to 1 gram, accurately weighed, into a separatory funnel, dissolve in about 25 cc. of water, acidulate with dilute sulphuric acid, and shake out with successive portions of 20 cc. of chloroform. Transfer chloroformic solution into tared beaker, through dry filter paper. Evaporate chloroform at slightly elevated temperature in a current of air. Finally dry the residue at 80° C., cool in desiccator and weigh.

Comments: From the amount of salicylic acid obtained, calculate the ammonium salicylate. See salicylic acid under acetanilid compound with sodium salicylate. One cubic centimeter of tenth normal potassium hydroxid is the equivalent of 0.0155 gram of ammonium salicylate.

Talcum, etc.: See Ammonium chlorid.

AMMONIUM SALICYLATE COMPOUND.

This mixture usually contains ammonium salicylate, acetphenetidin, sodium bicarbonate and caffein, together with the usual ingredients employed in the manufacture of tablets.

Acetphenetidin and caffein: Extract as directed under acetanilid compound with sodium bromid, transfer chloroformic solution to tared beaker and finish by method under acetphenetidin and caffein.

Ammonium salicylate, Method A: Follow directions for estimating sodium salicylate under acetanilid compound with sodium salicylate, substituting ammonium for sodium.

Method B, Ammonia gas (NH_3)*:* Follow directions under ammonium chlorid.

AMMONIUM SALICYLATE COMPOUND WITH SALICIN.

Contains ammonium salicylate, acetphenetidin, caffein, sodium bicarbonate, salicin, starch, etc. Exhaust about 2 grams, accurately weighed, with warm alcohol, transfer alcoholic extract to a 200 cc. tared beaker, through filter, evaporate in a current of warm air at room temperature or slightly above, heat at about 80° C. for one-half hour, cool and weigh. This gives the combined weights of ammonium salicylate, acetphenetidin, caffein and salicin.

Caffein and acetphenetidin: Transfer the residue into a separatory funnel with water and chloroform, using water first. The former should not exceed 50 cc. nor the latter 25 cc. Render the mixture alkaline and follow instructions under acetphenetidin and caffein.

Ammonium salicylate: Acidulate solution from which caffein and acetphenetidin have been removed with dilute hydrochloric acid and extract with chloroform. Proceed as directed under ammonium salicylate. This removes salicylic acid from the mixture.

Salicin: Transfer mixture from which salicylic acid has been removed to a 200 cc. beaker, wash separatory and filter paper with water, add washings to beaker, digest on steam bath until all chloroform has been dissipated, cool, dilute to about 175 cc., add 20 cc. of concentrated hydrochloric acid and finally make up to 200 cc. Mix thoroughly, transfer to 500 cc. flask, attach to reflux condenser and heat to boiling for two hours. Estimate the dextrose formed by method given in Bulletin No. 107 (Revised), Methods of Analysis, page 49.

Reactions:

$$\underset{\text{Salicin}}{C_{13}H_{18}O_7} + H_2O = \underset{\text{Dextrose}}{C_6H_{12}O_6} + \underset{\text{Saligenin}}{C_7H_8O_2}$$

or

$$\underset{\text{Salicin}}{2C_{13}H_{18}O_7} + H_2O = \underset{\text{Dextrose}}{2C_6H_{12}O_6} + \underset{\text{Saliretin}}{C_{14}H_{14}O_3}$$

Either formula may be used to calculate the salicin, from the dextrose formed, in that a given amount of salicin always produces the same quantity of dextrose.

ANALGESIC COMPOUND.

This mixture contains acetanilid, caffein, sodium bicarbonate, codein sulphate, sodium salicylate, together with the usual excipients.

Caffein and acetanilid: Place about 1 gram accurately weighed into separa-

tory funnel (A), add 25 cc. of chloroform, shake well, then add 25 cc. of water and enough dilute sulphuric acid to make acid. Agitate thoroughly, set aside to permit the chloroform to separate and clear. Transfer chloroform solution to another separatory funnel (B) through a dry filter. Repeat this operation with successive portions of chloroform until all the caffein, acetanilid and salicylic acid are removed. Add 20 cc. of water and 5 cc. of normal sodium hydroxid solution, or sufficient to make distinctly alkaline, to the chloroformic solution in separatory funnel (B), agitate well, set aside to let chloroform separate and clear. Draw off chloroform solution into separatory funnel (C). Treat chloroformic solution in separatory (C) with several successive portions of slightly alkaline water until all of the sodium salicylate is removed. Collect all of the alkaline water in separatory funnel (B), wash with 20 cc. of chloroform which is to be transferred to separatory (C). Separatory (C) contains all of the caffein and acetanilid in solution. Determine these drugs by method under acetanilid compound.

Salicylic acid: Render solution in separatory funnel (B) acid with dilute sulphuric acid, and proceed as directed under ammonium salicylate.

Codein: Render solution in separatory funnel (A) alkaline with potassium hydroxid solution, and follow directions for codein under acetanilid compound with codein.

ANODYNE COMPOUND.

The active ingredients are acetanilid, caffein and sodium bicarbonate. Analyze as directed under acetanilid compound.

ANTIPYRIN TABLETS.

Proceed as directed for acetanilid, Method A, under acetanilid tablets.

Purity of antipyrin: The purity of the antipyrin can be determined by the standard prescribed by the Pharmacopœia. It should melt between 111° and 113° C.

ANTISEPTIC TABLETS.

The chief active agent in these tablets is corrosive sublimate. The term "antiseptic" is generally applied to mercuric chlorid mixed with citric acid, or ammonium chlorid or sodium chlorid. These chemicals increase the solubility of the mercurial compound and render it more useful as an antiseptic.

Mercuric Chlorid, Method A: In a 200 cc. beaker dissolve about ½ gram, accurately weighed, in 100 cc. of water, acidulate with hydrochloric acid, heat to boiling, and precipitate with washed hydrogen sulphid gas. Transfer the precipitate to an ignited tared Gooch crucible, wash thoroughly with hot water and finally with alcohol; dissipate the alcohol from the Gooch crucible and wash the precipitate with repeated small portions of carbon bisulphid until all of the free sulphur is removed, dry at 100° C, cool and weigh as mercuric sulphid. From these data calculate the mercuric chlorid.

Comments: Methods B and C under Corrosive Sublimate tablets may also be applicable but they have not been tried.

Citric acid: Introduce 1 gram into a suitable beaker, add 25 cc. of water, an excess of neutral sodium chlorid, about 6 grams, dissolve and titrate directly with a standard potassium hydroxid solution, using phenolphthalein as indicator.

Comments: For determining ammonium chlorid or sodium chlorid see Cor-

rosive Sublimate with these ingredients. The added coloring matter frequently present in antiseptic tablets may interfere somewhat with the method. One cubic centimeter of tenth normal potassium hydroxid solution is the equivalent of 0.07003 gram of crystallized citric acid.

Arsenic trioxid: Treat a suitable amount of the powdered material with tenth normal sodium hydroxid solution to remove the arsenical compound, neutralize the solution with hydrochloric acid, add sodium bicarbonate, and treat immediately with tenth normal iodin solution.

Reactions: $As_2O_3 + 2I_2 + H_2O = 4HI + 2H_3AsO_4$

$NaHCO_3 + HI = NaI + H_2O + CO_2$.

One cubic centimeter of tenth normal iodin solution is the equivalent of 0.004948 gram of arsenic trioxid.

ASPIRIN TABLETS.

Follow directions for acetanilid (Method A) under acetanilid compound.

ATROPIN SULPHATE.

Atropin: Dissolve ½ gram in water, render alkaline with ammonium hydroxid and extract with a mixture of ether, 1 part, chloroform, 2 parts. Transfer immiscible mixture containing the atropin to a tared beaker, evaporate at room temperature in a current of warm air. Finally heat at 100° C. for a few minutes, transfer to desiccator, cool and weigh.

Comments: Atropin sulphate tablets should be freely soluble in water. The lubricant usually employed for this form of medication is boric acid.

BISMUTH SUBNITRATE.

Bismuth oxid, Method A: Ignite in a small, fused silica evaporating dish 2 grams accurately weighed of bismuth subnitrate at a dull, red temperature until all nitrous vapors cease to be evolved and all organic matter is destroyed. Cool, add a few drops of nitric acid to convert any metallic bismuth into nitrate, heat gently to evaporate excess of acid and ignite as before. Transfer evaporating dish to desiccator, cool and weigh. Deduct weight of talcum (below) which leaves amount of bismuth oxid.

Bismuth oxid, Method B: By determining the nitrogen present the amount of bismuth subnitrate can be approximately estimated. Methods for determining nitrogen in nitrate bearing substances will be found in Methods of Analysis, Bulletin 107 (Revised), pages 7 to 9, inclusive.

Talcum, etc.: Weigh 3 grams of powdered material into a suitable beaker, add 25 cc. of 20 percent nitric acid, mix thoroughly, warm to 40° C., set aside for about one hour, and during the interim agitate from time to time, then transfer to a tared previously heated Gooch crucible provided with a nitric acid treated mat of asbestos, using a little 20 percent nitric acid. Wash residue with a little nitric acid of same strength, then with dilute (10 percent) nitric acid and finish with water. Dry residue, ignite to a white or nearly white ash, cool and weigh.

Comments: Bismuth subnitrate varies somewhat in composition. It should, however, yield not less than 80 percent of pure bismuth oxid.

BISMUTH SUBNITRATE AND CALOMEL.

Bismuth subnitrate: Determine this chemical by a method given under bismuth subnitrate.

Calomel: Introduce about 2 grams accurately weighed into a 200 cc. flask, add 50 cc. of water and 25 cc. of approximately normal potassium hydroxid. Attach flask to reflux condenser and heat for about one-half hour, filter, wash residue with water and collect filtrate and washings in beaker, acidulate contents with nitric acid, add an excess of silver nitrate to precipitate the chlorid, titrate back excess of silver nitrate with tenth normal solution of potassium sulphocyanate, using about 1 cc. of ferric ammonium sulphate, 10 percent as indicator. One cubic centimeter of tenth normal silver nitrate is the equivalent of 0.023606 gram of calomel.

Comments: If there is an excessive amount of starch present the method becomes very difficult, if not impossible, of operation.

CAFFEIN ALKALOID.

Caffein: Proceed as directed for acetanilid (Method A) under acetanilid tablets.

After evaporating the chloroform solution to apparent dryness, add 5 cc. ether, evaporate carefully, finally dry at 80° C. for one-half hour, cool in desiccator and weigh.

CAFFEIN CITRATED.

Caffein: Proceed as directed under acetanilid compound for estimating caffein, except that chloroform solution is carefully evaporated to dryness and the procedure concluded as under caffein alkaloid.

Citric acid: Introduce about 2 grams, accurately weighed, into a beaker, dissolve in 25 cc. of water, and determine the amount of citric acid by means of tenth normal potassium hydroxid solution, using phenolphthalein as indicator. See citric acid antiseptic tablets.

CALOMEL AND SODIUM BICARBONATE.

Calomel, Method A: Introduce into a beaker about 1 gram, accurately weighed, disintegrate with about 50 cc. of water, add 5 grams of potassium iodid, agitate the mixture for a short time, then add an excess of standard tenth normal iodin solution. Allow the solution to stand for about 15 minutes, then determine the excess of iodin with a standard tenth normal solution of sodium thiosulphate, using starch paste as indicator.

Comments: In order to insure against possible error, run a control, using the same amount of potassium iodid and iodin solution as in the procedure above. The iodin solution and the potassium iodid may be added in reverse order and it is claimed by some with better results.

One cubic centimeter of tenth normal iodin solution is the equivalent of 0.023606 gram of calomel.

Reactions: $2HgCl + 6KI + I_2 = 2HgK_2I_4 + 2KCl$

$I_2 + 2Na_2S_2O_3 = 2NaI + Na_2S_4O_6$.

Method B: Introduce into a 200 cc. beaker about 1 gram, accurately weighed, of the mixture, treat with warm water (not above 60° C.) and assist in disin-

tegrating the tablets by means of a stirring rod, allow the mixture to stand for about one-half hour, then filter and collect the calomel on a tared, previously ignited, porcelain Gooch crucible, provided with an asbestos mat, wash with water and finally with alcohol, then dry at 100° C., cool in a desiccator and weigh. Heat the Gooch crucible in a Bunsen flame sufficiently to completely volatilize the calomel. The difference between the two weights represents the calomel.

Method C: Introduce about ½ gram, accurately weighed, into a 100 cc. beaker, add 20 cc. of water and about 10 cc. of normal sodium hydroxid solution, transfer to steam bath and heat for about one hour. This procedure will disintegrate the calomel, forming insoluble mercury compounds, chiefly mercurous oxid, and sodium chlorid. After the reaction is complete dilute to 50 cc., filter through a Gooch crucible, and wash thoroughly with hot water. Acidulate the filtrate with nitric acid, add standard tenth normal solution of silver nitrate to excess and 1 cc. of ferric ammonium sulphate solution, then titrate back the excess of silver nitrate, with tenth normal potassium thiocyanate.

Comments: If desired, the silver chlorid may be collected in a Gooch crucible and determined in the usual way. From the data above the amount of calomel can be readily calculated. If the mixture contains starch or a gummy substance this method will not work satisfactorily.

Reactions: $2HgCl + 2NaOH = Hg_2O$ (chiefly) $+ 2NaCl + H_2O$

$NaCl + AgNO_3 = AgCl + NaNO_3$

$6KCNS + Fe_2(NH_4)_2(SO_4)_4 = Fe_2(CNS)_6 + (NH_4)_2SO_4 + 3K_2SO_4$.

One cubic centimeter of tenth normal silver nitrate is the equivalent of 0.023606 gram of mercurous chlorid.

Sodium bicarbonate: Titrate a given weight with normal sulphuric acid, using methyl orange as indicator if no disturbing agents are present. One cubic centimeter of tenth normal sulphuric acid is the equivalent of 0.084 gram of sodium bicarbonate.

CALOMEL AND LACTOSE.

Calomel: Proceed as directed under calomel and sodium bicarbonate.

Lactose: Introduce about 1 gram, accurately weighed, into a 100 cc. glass-stoppered flask or cylinder, add about 50 cc. of water, agitate thoroughly to disintegrate, and finally make up to 100 cc. Mix thoroughly and filter; reject the first 20 cc. of the filtrate. Proceed from this point as directed on pages 241-2 of Methods of Analysis, Bureau of Chemistry, Bulletin No. 107 (revised).

CINCHONIDIN.

Cinchonidin: Introduce 1 gram of the finely powdered material into a separatory funnel, add 50 cc. of water, and acidulate with dilute sulphuric acid, add 25 cc. of chloroform, render alkaline with sodium hydroxid, agitate thoroughly, set aside for the chloroform to separate and then proceed as directed for codein under "Acetanilid Compound with Codein."

Comments: If the insoluble matter interferes with the process, filter the acidulated solution, then render alkaline, add chloroform and continue as above. The purity of the cinchonidin and many other alkaloids can be determined by dissolving in a little neutral alcohol, adding a slight excess of tenth normal sul-

phuric acid and titrating back excess of acid by means of fiftieth normal potassium hydroxid, using methyl red as indicator. Tenth normal factor for cinchonidin is 0.0294196.

CINCHONIDIN SULPHATE.

Follow directions under cinchonidin.

COCAIN AND COCAIN HYDROCHLORID.

Follow directions under cinchonidin. Tenth normal factor for cocain is 0.0303178; for cocain hydrochlorid 0.03396.

CODEIN AND CODEIN SULPHATE.

Follow directions under cinchonidin. Tenth normal factor for codein, 0.031719; for codein sulphate, 0.0393.

CORROSIVE SUBLIMATE TABLETS.

This chemical is generally mixed with such ingredients as sodium chlorid, ammonium chlorid, and citric acid, but it is also put in tablet form by means of lactose. In the latter case the term "tablet triturate" is usually applied. Mercuric chlorid tablets are frequently colored artificially.

Mercuric chlorid: Estimate by Method A under antiseptic tablets, and as follows:

Method B: Introduce 1 gram accurately weighed into a 250 cc. flask, dissolve in 25 cc. water, add 2½ grams of potassium iodid (dissolved in 5 cc. of water), 30 cc. of normal caustic alkali or sufficient to make alkaline and 3 cc. of a 37 percent formaldehyde solution, mix thoroughly and set aside for 10 minutes with occasional shaking, then add 10 cc. or sufficient to make acid, 36 percent acetic acid, diluted with an equal volume of water, mix well, finally add 50 cc. of tenth normal iodin solution, stopper flask and shake vigorously for two minutes, then occasionally until the mercury is dissolved. Estimate excess of iodin with tenth normal sodium thiosulphate solution, using starch as indicator. Deduct the excess of iodin from the total amount of iodin used which gives the amount of iodin combined with the mercury.

Comments: In an alkaline medium formaldehyde reduces the mercury in the corrosive sublimate to the metallic state. The following equation shows the reaction between the metallic mercury and iodin:

$$Hg + I_2 + 2KI = K_2HgI_4.$$

Each cubic centimeter of tenth normal iodin solution is the equivalent of 0.01385 of mercuric chlorid.

Method C: Dissolve about 1 gram of the substance, equivalent to about ½ gram of mercuric chlorid, accurately weighed, in 75 cc. of water and render neutral, if not already so, to methyl orange, litmus or some other suitable indicator, add 10 cc. of 2 percent hydrocyanic acid solution, also made neutral to the indicator to be used. Estimate the amount of hydrochloric acid liberated by titrating with fifth normal sodium hydroxid solution.

Comments: The method depends upon the formation of an undissociated molecule of mercuric cyanid and the liberation of hydrochloric acid. The acidity of the hydrocyanic acid solution to the particular indicator to be used can be

determined and subtracted from subsequent operations instead of making this determination for each titration. The indicator to be used depends on the nature of the coloring matter present, if any.

Reactions: $HgCl_2 + 2HCN = Hg(CN)_2 + 2HCl$ or

$Hg^{++} + 2Cl^- + 2H^+ + 2CN^- = Hg(CN)_2 + 2H^+ + 2Cl^-$

Each cubic centimeter of fifth normal sodium hydroxid is the equivalent of 0.02715 gram of mercuric chlorid.

CORROSIVE SUBLIMATE AND AMMONIUM CHLORID.

Mercuric chlorid: Proceed as directed for determining this chemical by methods under antiseptic tablets and corrosive sublimate tablets.

Ammonia Gas (NH_3): Place about 1 gram accurately weighed into a 500 cc. Kjeldahl flask, dissolve in 200 cc. water, add 25 cc. of potassium sulphid solution (40 grams of commercial potassium sulphid dissolved in 1 liter of water)[1] or sufficient to precipitate all of the mercury. Render alkaline with sodium hydroxid and proceed from this point as directed by Method B under ammonium chlorid.

CORROSIVE SUBLIMATE AND SODIUM CHLORID.

Mercuric chlorid: Proceed by Method, A, B or C under corrosive sublimate tablets.

Method D: Into a tared porcelain evaporating dish weigh about 1 gram of the substance, previously dried at 100° C., heat in a muffle furnace at a dull, red temperature until all of the corrosive sublimate is volatilized, transfer dish to desiccator, cool and weigh. The loss represents mercuric chlorid and organic coloring matter, if present.

Sodium Chlorid, Method A: The residue left in the evaporating dish by Method D above represents the sodium chlorid.

Method B: Dissolve the residue left by Method D above in 50 cc. of water, acidulate with nitric acid and add an excess of tenth normal silver nitrate solution. Titrate back excess of silver nitrate with potassium sulphocyanid, using 1 cc. of 10 percent ferric ammonium sulphate solution as indicator.

Comments: If the amount of sodium chlorid should require too much silver nitrate solution, the residue can be dissolved in a suitable volume of water and an aliquot taken for the determination.

One cubic centimeter of tenth normal silver nitrate solution is the equivalent of 0.005846 gram of sodium chlorid.

HEROIN HYDROCHLORID.

Proceed as directed under cinchonidin.

HEROIN AND PHENACETIN.

Phenacetin: Introduce from ½ to 1 gram of the material into a separatory funnel, add 25 cc. of chloroform, agitate well, then add 25 cc. of water, and sufficient dilute sulphuric acid to acidulate, repeatedly agitate so as to bring about complete solution of the water-soluble material, then set aside to permit the chloroform to clear and separate. Transfer the chloroformic solution to tared

[1] See Methods of Analysis, Bull. 107 (revised), p. 6.

beaker. Repeat the operation until all the phenacetin is removed from the mixture. Finish by Method A under acetanilid tablets.

Heroin: Render the solution from which the phenacetin has been removed alkaline with potassium hydroxid and proceed as directed under cinchonidin. One cubic centimeter of tenth normal sulphuric acid is the equivalent of 0.03692 gram of diacetyl morphin or 0.040566 gram diacetyl morphin hydrochlorid.

HEXAMETHYLENAMIN.

This chemical is usually compressed without the addition of any foreign material, and it is therefore generally necessary only to accurately weigh the tablets in order to determine whether or not they are of proper weight.

It is desirable, however, to examine the product by the Pharmacopœial test. If it should be found that foreign material is present, such as talcum, starch, etc., the powdered material can readily be extracted with chloroform, the chloroformic extract collected in a tared beaker, evaporated, dried, cooled and weighed.

Nitrogen: By determining the percent of nitrogen the amount of hexamethylenamin and its purity can readily be ascertained. The nitrogen may be estimated by Kjeldahl or Gunning method, in Methods of Analysis, Bulletin of Bureau of Chemistry No. 107 (revised), pages 6 and 7, respectively. Hexamethylenamin contains 39.99 percent of nitrogen.

MIGRAIN TABLETS.

Under this name various mixtures are met with. A common one consists of acetanilid, caffein and sodium bicarbonate. Analyze by methods prescribed under acetanilid compound.

A second mixture encountered consists of acetanilid, caffein, sodium bicarbonate and sodium salicylate. This combination may be analyzed by procedure outlined under acetanilid compound with sodium salicylate.

MORPHIN SULPHATE.

This chemical is usually compressed with lactose. Boric acid is commonly used as lubricant. The amount of morphin may be determined either directly or indirectly as follows:

Morphin, Method A: Dissolve from ½ to 1 gram in 25 cc. of water in a suitable vessel, render alkaline with ammonium hydroxid, agitate well and allow to stand one-half hour, transfer to funnel with a small plug of cotton in throat. The precipitated morphin will be collected on the cotton. Wash the morphin sufficiently with cool water to remove all of the ammonia, then transfer the morphin and cotton to a porcelain evaporating dish, using from 25 to 50 cc. of alcohol (neutral), depending on the amount of morphin, add a slight excess of tenth normal sulphuric acid to convert the morphin into morphin sulphate, allow to stand a short time, then titrate back excess of acid with fiftieth normal potassium hydroxid, using methyl red as indicator. One cubic centimeter of tenth normal sulphuric acid is the equivalent of 0.03032 gram of morphin, or 0.0379 gram of morphin sulphate.

Method B: Estimate the amount of sulphate present in a definite quantity of morphin tablets by precipitating with barium chlorid in the usual manner. From

the amount of barium sulphate obtained, the amount of morphin sulphate can be readily calculated.

Method C: Determine nitrogen by Kjeldahl or Kjeldahl-Gunning methods, pages 5 and 7, respectively, Methods of Analysis, Bulletin No. 107. The nitrogen may also be estimated by Kjeldahl-Gunning-Arnold method. (U. S. Department of Agriculture, Bureau of Chemistry Circular 108, p. 15, 1912.)

Comments: The latter process is shorter than either of the other two. It is identical with the official Kjeldahl method except that 10 grams of crystallized potassium sulphate are added as in the Gunning method, omitting the potassium permanganate.

Lactose: Proceed as directed for this carbohydrate under calomel and lactose.

NITROGLYCERIN TABLETS.

Preparation of the sample: Crush 25 tablets under 10 cc. of ether. A 25 cc. cylindrical graduate makes a convenient container and a stout glass rod is used to crush the tablets. Rinse the rod with a little ether, allow the insoluble material to settle, and decant the solution into a 50 cc. graduated flask. No special care need be taken to prevent a little insoluble material from going into the flask. Wash the residue repeatedly with 5 cc. portions of ether and decant the washings into the flask until it has been filled to the mark. Insert stopper and mix well.

Nitrate Method: Place 20 cc. of the ethereal solution in a carefully dried and tared 50 cc. beaker. (A second aliquot of 10 cc. may be used as a check.) Evaporate the solvent in a vacuum desiccator charged with sulphuric acid. Apply the vacuum gradually, to prevent ebullition. Leave the beaker in the vacuum 30 minutes after the ether has evaporated. Weigh and calculate the ether extract per tablet. Treat the residue with 2 cc. phenoldisulphonic acid reagent, rotating the beaker in such a way that the reagent comes in contact with the entire inner surface. After 10 minutes add water and wash into a 100 cc. flask. (If a check analysis, as suggested, was made, wash this into a 50 cc. flask. Dilute to the mark and place 10 cc., representing 1 tablet, in a 100 cc. flask, add about 50 cc. water and a few drops more potassium hydroxid solution (20 percent) than is required to neutralize the acid. (Do not use sodium hydroxid.) Dilute to the mark and compare the color with that produced by a standard nitrate solution similarly treated. Use any convenient colorimeter or Nessler tubes.

Reagents and standards: Phenoldisulphonic acid reagent.—Dissolve 25 grams of pure white phenol in 150 cc. of concentrated sulphuric acid, add 75 cc. of fuming sulphuric acid (13 percent SO_3), stir well, and heat for two hours at about 100 degrees.

Standard Solution.—Dissolve 0.7217 gram potassium nitrate in 1 liter of water. Evaporate 10 cc. of this solution just to dryness on the steam bath. Cool and treat the residue with 2 cc. phenoldisulphonic acid reagent, observing the precautions noted above and using a glass rod if necessary to aid the solution of the residue. After 5 or 10 minutes dilute to 250 cc. Each cubic centimeter of this solution contains 0.004 milligram of nitrogen. Add an excess of potassium hydroxid solution to an aliquot of this solution and dilute to 100 cc. It is advisable to prepare a standard of approximately the same color as the unknown. Nitroglycerin is 5.4 times nitrate nitrogen.

Reactions:

$C_3H_5(ONO_2)_3 + 3C_6H_3OH(SO_3H)_2 = 3C_6H_2OH(SO_3H)_2NO_2 + C_3H_5(OH)_3$

Nitroglycerin. Phenoldisulphonic acid. Nitrophenoldisulphonic acid. Glycerol.

$C_6H_2OH(SO_3H)_2NO_2 + 3KOH = C_6H_2OK(SO_3K)_2NO_2 + 3H_2O$

Nitrophenoldisulphonic acid. Tripotassiumnitrophenoldisulphonate.

Nitrite or modified Hay method: Place 5 cc. of the ethereal solution in a 50 cc. beaker, dilute with 5 or 10 cc. alcohol and add about 5 cc. of ½ percent. alcoholic potassium hydroxid. Cover with a watch glass and allow to stand 10 minutes. Place on steam bath, allow to boil, remove the watch glass, and when most of the liquid is evaporated add about 25 cc. water and leave on steam bath until about half the liquid has evaporated or until the odor of alcohol can no longer be detected. Cool and dilute to 250 cc. Each cubic centimeter of this solution represents 0.01 of a tablet. Introduce an aliquot representing 0.02 to 0.04 milligram of nitroglycerin into a 100 cc. graduated flask, dilute with sufficient water to make the volume 90 to 95 cc., add 1 drop concentrated hydrochloric acid, then 2 cc. sulphanilic acid solution and 2 cc. napthylamine hydrochlorid solution. Complete the volume with water. Prepare at the same time and in the same way standards containing known amounts of sodium nitrite. Stopper the flasks and mix well. Compare the colors after 30 minutes. Nitroglycerin is calculated by multiplying the nitrogen found by 8.

Reagents and standards: Sulphanilic acid solution.—Dissolve 1 gram in 100 cc. hot water.

Napthylamine hydrochlorid solution.—Under a hood boil 0.5 gram of the salt with 100 cc. water for 10 minutes, keeping the volume constant. Filter and keep in a glass stoppered bottle.

Standard solution of sodium nitrite.—To a cold solution of about 2 grams of sodium or potassium nitrite in 50 cc. of water, add a solution of silver nitrate as long as a precipitate appears. Decant the liquid and thoroughly wash the precipitate with cold water. Dissolve in boiling water. On cooling the silver nitrite is precipitated. Dry the crystals in the dark at the ordinary temperature (preferably in a vacuum). Weigh out 220 milligrams of the dry silver nitrite, dissolve in hot water and decompose with a slight excess of sodium chlorid. When the solution becomes clear, dilute to 1 liter. Dilute 5 cc. of this solution to 1 liter. This second dilution is the standard to be used. It contains 0.0001 milligram of nitrite nitrogen per cubic centimeter.

Essential reactions:

$C_3H_5(ONO_2)_3 + 5KOH = KNO_3 + 2KNO_2 + HCO_2K + CH_3CO_2K + 3H_2O$

$C_6H_4NH_2HSO_3 + HNO_2 = C_6H_4N_2SO_3 + 12H_2O$

Sulphanilic acid. Paradiazobenzenesulphonic acid.

$C_6H_4N_2SO_3 + C_{10}H_7NH_2 = C_{10}H_6NH_2NNC_6H_4HSO_3$

Alpha Naphthylamine. Azoalphamidonaphthalene-parazobenzenesulphonic acid.

Comments: Only nitrite-free water should be used in the estimation by this method.

NUX VOMICA TABLETS.

Total alkaloids: Introduce 5 grams of the material into a 200 cc. graduated cylinder, add 100 cc. of chloroform-ether mixture (1-4 by volume), agitate well and repeatedly for one-half hour, add 5 cc. of ammonia water, or sufficient to render alkaline, agitate repeatedly for 1 hour, then make up to 150 cc., agitate well, set aside for the insoluble matter to settle and the chloroform-ether mixture to clear, then decant or pipette off an aliquot part (for example, 100 cc.) and transfer to separatory funnel. Acidulate chloroform-ether solution with dilute sulphuric acid and add enough water to make about 25 cc. aqueous solution, agitate well, allow to separate and draw off the watery portion into another separatory. Repeat this operation two or three times with about 20 cc. of water and collect in separatory funnel. Render the acid solution in second separatory funnel alkaline with ammonia water, extract with three successive portions of 20 cc. of chloroform, collect chloroformic solution in another separatory, wash with 25 cc. of water, transfer the chloroform into tared beaker, evaporate on steam bath at low temperature. Rinse separatory funnel with a small portion of chloroform and transfer to beaker. When chloroform is dissipated add about 5 cc of ether, evaporate and dry at 100° C. for one-half hour, cool and weigh.

Strychnin: Destroy brucin in dried residue by adding 6 cc. of 35 percent nitric acid, mixing well and allowing the mixture to stand at ordinary temperature for 10 minutes.

Take up residue with water and transfer to separatory funnel with several small portions of water, render alkaline with ammonia water, and proceed as directed for total alkaloids.

Comments: The amount of strychnin and its purity may now be determined by taking the alkaloid up in a little (neutral) alcohol, adding a slight excess of tenth normal sulphuric acid and titrating back excess of acid with fiftieth normal potassium hydroxid, using methyl red as indicator.

One cubic centimeter of tenth normal sulphuric acid is the equivalent of 0.0334 gram of strychnin.

Brucin: Determine by subtracting strychnin from total alkaloids.

PHENACETIN TABLETS.

Analyze by methods under acetanilid tablets. Determine phenacetin by Method A.

PHENOLPHTHALEIN.

Determine by Method A under acetanilid tablets, using alcohol, however, in place of chloroform.

Comments: This chemical is now found in all forms of mixtures. A little organic acid is sometimes used to prevent the tablets from turning reddish.

POTASSIUM BICARBONATE.

Potassium bicarbonate is generally compressed without any excipient; in such cases titration may be made directly; otherwise, extract a suitable quantity of the powder with water, filter, wash and titrate the aqueous solution with standard sulphuric acid, using methyl orange as indicator.

One cubic centimeter tenth normal acid is the equivalent of 0.01001 gram of potassium bicarbonate.

POTASSIUM IODID.

Titrate direct, or, when foreign matter is present, extract a convenient quantity with water, wash residue, collect filtrate and washings in beaker, acidulate with nitric acid, add an excess of silver nitrate to precipitate the iodin, then titrate back with a tenth normal solution of potassium sulphocyanate, using about 1 cc. ferric ammonium sulphate, 10 percent solution, as indicator.

Reaction: $KI + AgNO_3 = AgI + KNO_3$.

One cubic centimeter of silver nitrate is the equivalent of 0.016602 gram of potassium iodid.

POTASSIUM PERMANGANATE.

Extract a suitable quantity with water, acidulate with sulphuric acid, warm to about 60° C., and titrate with a tenth normal oxalic acid solution.

Reactions: $2KMnO_4+5H_2C_2O_4+3H_2SO_4=K_2SO_4+2MnSO_4+10CO_2+8H_2O$.

One cubic centimeter of tenth normal oxalic acid is the equivalent of 0.00316 gram of potassium permanganate.

QUININ BISULPHATE AND QUININ SULPHATE.

Proceed as directed under cinchonidin.

One cubic centimeter of tenth normal sulphuric acid is the equivalent of 0.0378 gram of crystalline quinin, 0.0436 gram of quinin sulphate and 0.0548 gram of quinin bisulphate.

RHEUMATIC TABLETS.

One mixture was found to consist of sodium salicylate, and sodium bicarbonate, together with excipients.

Salicylic acid: Proceed as directed for salicylic acid under ammonium salicylate.

Sodium bicarbonate, talcum, etc.: Proceed as directed under acetanilid compound.

A second mixture was found to contain sodium salicylate, sodium bicarbonate and codein sulphate.

Salicylic acid: Proceed as directed for determining salicylic acid under ammonium salicylate.

Codein sulphate: Codein sulphate will be left in the solution from which the salicylic acid has been extracted. This can be removed by rendering the solution alkaline, thus liberating the codein which may now be extracted from the mixture by chloroform. The remainder of the procedure is given under Acetanilid Compound with Codein.

SALICIN TABLETS.

Exhaust a suitable quantity of the powdered material by Method A, under acetanilid tablets, substituting, however, alcohol for chloroform.

SALOL TABLETS.

This article may be analyzed by methods under acetanilid tablets. Salol is determined by Method A, using ether in place of chloroform. Considerable care must be exercised in dissipating the solvent so that none of the salol is lost. The best course to follow is to permit the ether to evaporate at room temperature in a current of warmed air, then introduce the beaker into a vacuum desiccator and allow it to remain for 24 hours before weighing.

SALOPHEN TABLETS.

Determine by Method A under acetanilid tablets.

SANTONIN AND CALOMEL.

Santonin: Determine by Method A under acetanilid tablets.

Calomel: Determine this chemical in residue left after extracting the santonin with chloroform by Method A given under calomel and sodium bicarbonate.

SODIUM SALICYLATE TABLETS.

Salicylic acid: Proceed as directed under ammonium salicylate for determining salicylic acid.

Sodium salicylate: Ignite a given weight of the material, extract the residue with water and titrate with tenth normal sulphuric acid, using methyl orange as indicator.

One cubic centimeter of tenth normal sulphuric acid is the equivalent of 0.0160 gram of sodium salicylate.

SODIUM BICARBONATE.

Determine by method given under potassium bicarbonate. The normal factor for sodium bicarbonate is 0.084.

SODIUM BROMID.

Determine by method given under potassium iodid. Tenth normal factor for sodium bromid is 0.010292.

STRONTIUM BROMID.

Determine by method given under potassium iodid. The tenth normal factor for strontium bromid is 0.01778.

STRYCHNIN SULPHATE.

Introduce about 1 gram of the powdered tablets into separatory funnel, dissolve in 25 cc. of water rendered alkaline and remove the strychnin with three or more successive portions of chloroform. The chloroform solutions are collected in a tared beaker and evaporated to dryness. The residue is allowed to cool, 5 cc. of ether added, the ether dissipated and the residue dried at 100° C. for 15 minutes.

Comments: Care should be exercised in drying so that no loss will occur by decrepitation of the strychnin. The purity and amount of strychnin present may be determined by dissolving the residue in neutral alcohol, adding an excess of tenth normal sulphuric acid, and titrating back excess of acid with fiftieth normal potassium hydroxid, using methyl red as indicator. One cubic centimeter of tenth normal sulphuric acid is the equivalent of 0.0334 gram of strychnin and 0.0428 gram strychnin sulphate.

SALOPHEN.

Exhaust from ½ to 1 gram of the powdered material with alcohol, as directed under acetanilid tablets, transfer alcoholic filtrate into tared beaker, evaporate the alcohol and heat the residue for 15 minutes at 100° C., transfer beaker to desiccator, cool and weigh.

Comments: The purity of salophen can be determined by ascertaining its melting temperature which varies from 187° to 188° C.

TRIONAL.

Proceed as directed under salophen.

Comments: The melting point of trional is 76° C.

VERONAL.

Proceed as directed under salophen, using, however, acetone as solvent.

Comment: Melting point, 188° C.

ZINC PHENOLSULPHONATE.

Zinc oxid: Exhaust from ½ to 1 gram of powdered material with alcohol, as directed under acetanilid tablets, collect filtrate in tared evaporating dish, dissipate the alcohol, incinerate the residue in a muffle at a dull, red heat until a white or nearly white residue is left. Cool dish in desiccator and weigh residue as zinc oxid.

Comments: Uneffloresced zinc phenolsulphonate leaves 14.6 percent of its weight as zinc oxid on ignition.

Reaction: $Zn(C_6H_4(OH)SO_3) + 14O_2 = ZnO + 12CO_2 + 2SO_3 + 5H_2O$.

Residue insoluble in alcohol: See residue insoluble in chloroform under acetanilid tablets. By deducting the amount of residue so obtained from the total amount of material originally taken the quantity of alcohol-soluble material (zinc phenolsulphocarbolate, chiefly), is obtained.

THE COST OF RODENTS.

Rats, mice, flies, mosquitoes, and the various form of body parasites have always been held in contempt and disgust, and always and everywhere have been regarded as vermin. Growing knowledge of the important role played by these lower forms of animal life in the transmission of disease is ample justification for this feeling. They are exceedingly expensive.

The Journal of the American Medical Association comments on a recent article in The Farm and Fireside, which discusses the amount of damage done in this country by rats, and estimates that there are in the United States at least 300,000,000 of these animals, alike destructive to property and dangerous to health. Rats are said to destroy $100,000,000 worth of grain every year in this country, or enough to feed one hen for every man, woman and child in the nation. The annual cost of rats to the nation is estimated at $360,000,000.

In addition, the rat population of the country forms a fertile field for the dissemination of bubonic plague, which only needs a starting point in any of our seaports to spread throughout the country and cause the loss of thousands of lives.

In the same issue of The Farm and Fireside, but in a different department, appears an article on the cattle tick, in which it is estimated that the difference between the market value of an animal free from this parasite and one infested with it is about $8 a cow, and that the cattle tick is today costing the stockmen of the country $1,000,000,000 each decade, or $100,000,000 each year.

The discovery and development of bacteriology showed that man had been carrying on for centuries an unconscious struggle with the lower forms of vegetable life. Recent additions to knowledge of the habits and characteristics of vermin show that an equally relentless struggle has been going on between man and the lower forms of animal life.

Contributed and Selected

UNITED STATES PHARMACOPŒIA.

NINTH REVISION.

ABSTRACT OF PROPOSED CHANGES WITH NEW STANDARDS AND DESCRIPTIONS.

Copyright, 1914, by the Board of Trustees of the United States Pharmacopœial Convention.*
All Rights Reserved

PART V—FIRST PROOF.

A fifth installment of the Abstract of proposed new descriptions and standards and of changes in descriptions and standards is herewith submitted.

This Abstract embraces most of the Biological Products and Volatile Oils. Where no reference is made to rubrics, tests or assays, it is understood that the material facts remain the same as in the *United States Pharmacopœia*, Eighth Revision.

Other Abstracts will be submitted later. Comments should be sent to the Chairman of the Revision Committee, Joseph P. Remington, Longport, New Jersey, before September 1, 1914.

BIOLOGICAL PRODUCTS.

Glandulæ Suprarenales Siccæ.—The suprarenal glands of such animals as are used for food by man, cleaned, dried, freed from fat, and powdered, and yielding not less than 0.4 percent. nor more than 0.6 percent. of epinephrine. Added requirement: Not more than 7 percent. of moisture. *Assay*: Add 0.005 Gm. of finely powdered manganese dioxide and 10 Cc. of distilled water to 0.010 Gm. of Desiccated Suprarenal Glands; thoroughly shake the mixture several times during one hour and filter. Compare the color of the filtrate in a test-tube or in any convenient manner, with the color of standard solutions made as follows: Mix 1.85 Cc. of cobaltous chloride T. S. with 0.95 Cc. of gold chloride T. S. and 7.2 Cc. of distilled water; the color corresponds to 0.2 percent. of epinephrine in the filtrate obtained above; 2.95 Cc. of cobaltous chloride T. S. with 1.25 Cc. of gold chloride T. S. and 5.8 Cc. of distilled water corresponds in color to 0.4 percent. of epinephrine; 4.05 Cc. of cobaltous chloride T. S. with 1.35 Cc. of gold chloride T. S. and 4.6 Cc. of distilled water corresponds in color to 0.6 percent. of epinephrine; 5.15 Cc. of vobaltous chloride T. S. with 1.55 Cc. of gold chloride T. S. and 3 Cc. of distilled water corresponds in color to 0.8 percent. of epinephrine. The percentages of epinephrine indicated by the above color standards are based upon the maceration of 0.010 Gm. of the Desiccated Suprarenal Glands in 10 Cc. of distilled water as directed above and filtering. In samples containing more than 0.8 percent. of epinephrine, 0.005 Gm. of the Desiccated Suprarenal

*Permission to reprint for purposes of comment can be had on application to the Chairman of the Board of Trustees, J. H. Beal, Scio, Ohio.

Glands may be taken, in which case the percentage stated above, as indicated by the color standards, should be doubled. The standard color solutions keep unchanged indefinitely if sealed in test-tubes. The former test with ferric chloride T. S. is omitted.

Note:—The test solutions required above are made as follows:

Cobaltous Chloride T. S.—Two Gm. of Cobaltous Chloride dissolved with the aid of 1 Cc. of hydrochloric acid in sufficient distilled water to measure 100 Cc.

Gold Chloride T. S.—An aqueous solution of Gold Chloride containing 0.1 Gm. of gold in each 100 Cc. of solution, determined by analysis.

Glandulæ Thyroideæ Siccæ.—The Thyroid Glands of such animals as are used for food by man, freed from connective tissue and fat, dried and powdered and yielding not less than 0.17 percent. nor more than 0.23 percent. of iodine in thyroid combination. Iodine in inorganic or any other form of combination than that peculiar to the thyroid must be absent. Added requirement: Not more than 6 percent. of moisture. Ash changed from 6 percent. to 5 percent. Assay for iodine replacing former test for iodine compounds: Mix 1 Gm. of Desiccated Thyroid Glands in a nickel crucible of about 125 Cc. capacity, with 15 Gm. of a mixture composed of 138 parts by weight of anhydrous potassium carbonate, 106 parts of anhydrous sodium carbonate and 75 parts of potassium nitrate. Spread an additional 5 Gm. of this fusion mixture evenly over the surface. Heat the crucible over a Bunsen flame until no further carbonization is observed, cool it and dissolve the residue in about 150 Cc. of distilled water, warming to hasten solution. Transfer this solution to an Erlenmeyer flask of about 500 Cc. capacity, and add approximately 50 Cc. of a fresh solution of chlorinated soda. Now treat the mixture with enough phosphoric acid, diluted with an equal volume of distilled water, to produce an appreciable yellow tint of free chlorine, then add 10 Cc. more of the phosphoric acid diluted with an equal volume of distilled water and boil the contents of the flask for one-half hour or until the volume has been reduced to about 150 Cc. Cool the liquid, add 10 Cc. of an aqueous solution of potassium iodide (1 in 100) and titrate the liberated iodine with two-hundredth normal sodium thiosulphate V. S., starch paste being used as indicator just before the end of the reaction.

Serum Antidiphthericum.—Added description: "With sometimes a slight granular sediment." Definition and description otherwise as in U. S. P. VIII. The serum must come from healthy animals; must be sterile; must be free from toxin or bacterial products; and must not contain an excessive amount of preservative (0.5 percent. phenol, or 0.4 percent. cresol when such are used); and the total solids should not exceed 20 percent. Serum of a lower potency than 250 units per cubic centimeter is not to be sold. Only Serums may be sold as have been prepared and propagated in establishments licensed by the Secretary of the Treasury of the United States. The law requires that each container of Serum sold by licensed establishments shall bear upon the label, in addition to the name of the Serum, the name, address and license number of the manufacturer, and the date beyond which the contents cannot be expected to yield its specific results. The label should also contain the laboratory number of the Serum, the name and the percentage by volume of the antiseptic used (if such

be used) and the total number of antitoxic units claimed for the contents of the container.

Serum Antidiphthericum Purificatum.—A solution in physiological solution of sodium chloride of certain antitoxic proteins obtained from the blood serum or plasma of a horse, actively immunized against diphtheria toxin. After the serum or plasma from the immunized horse has been collected, the non-antitoxic proteins are removed by precipitation with ammonium sulphate and by dissolving the precipitate in saturated sodium chloride solution, the salts being then removed by dialysis. After dialysis is complete, sufficient sodium chloride is added to make an 0.8 percent. solution. Preserve in sealed glass containers in a dark place, at a temperature between 4.5° and 15° C. A transparent or slightly opalescent liquid, with sometimes a slight granular or ropy sediment, odorless, or having an odor due to the presence of the antiseptic used as a preservative. The liquid is sometimes more or less viscous. The serum must come from healthy animals; must be sterile; must be free from toxin or bacterial products and must not contain an excessive amount of preservative (0.5 percent. phenol or 0.4 percent. cresol, when such are used); and the total solids should not exceed 20 percent. Serum of a lower potency than 250 units per cubic centimeter is not to be sold. Other requirements as under Serum Antidiphthericum.

Serum Antidiphthericum Siccum.—Dried Diphtheria Antitoxin is obtained by the evaporation of either Antidiphtheric Serum or Purified Antidiphtheric Serum in a vacuum, over sulphuric acid, or by passing over it a current of warm air freed from bacteria. Preserve in amber-colored glass containers free from air in a dark place, at a temperature between 4.5° and 15° C. The Dried Serum occurs either in the form of orange or yellowish flakes or small lumps, or as a yellowish-white powder, without odor. The serum is readily soluble in nine parts of distilled water. The solution is opalescent and slightly viscous. For use the Serum should be dissolved under the most rigid asepsis, preferably in the original container. Dried Antidiphtheric Serum does not lose in potency, as does the liquid Serum. Other requirements as under Serum Antidiphthericum.

Serum Antitetanicum.—A fluid separated from the coagulated blood of a horse, *Equus Caballus Linné*, highly actively immunized against tetanus toxin. Preserve in sealed glass containers in a dark place, at a temperature between 4.5° and 15° C. A yellowish or yellowish-brown transparent or slightly turbid liquid with sometimes a slight granular sediment, odorless, or having an odor due to the presence of the antiseptic used as a preservative. Antitetanic Serum gradually loses its potency, the loss being greater at higher than at lower temperatures. The Serum must come from healthy animals; must be sterile; must be free from toxin or bacterial products; and must not contain an excessive amount of preservative (0.5 percent. phenol, or 0.4 percent. cresol, when such are used); and the total solids should not exceed 20 percent. Only such Serums may be sold as have been prepared and propagated in establishments licensed by the Secretary of the Treasury of the United States. The law requires that each container of Serum sold by licensed establishments shall bear upon the label, in addition to the name of the Serum, the name, address, and license number of the manufacturer, and the date beyond which the contents cannot be expected to yield its

specific results. The label should also contain the laboratory number of the Serum, the name and the percentage by volume of the antiseptic used (if such be used) and the total number of antitoxic units claimed for the contents of the container. The standard of strength, expressed in units of antitoxic power, shall be that established by the United States Public Health and Marine Hospital Service.

Serum Antitetanicum Purificatum.—A solution in physiological solution of sodium chloride of certain antitoxic proteins obtained from the blood serum or plasma of a horse, *Equus Caballus* Linné, and actively immunized against tetanus toxin. After the Serum or plasma from the immunized horse has been collected, the non-antitoxic proteins are removed by precipitation with ammonium sulphate and dissolving the precipitate in saturated sodium chloride solution, the salts being then removed by dialysis. After dialysis is complete, sufficient sodium chloride is added to make an 0.8 percent. solution. It should be kept in sealed glass containers in a dark place, at a temperature between 4.5° and 15° C. A transparent or slightly opalescent liquid, with sometimes a slight granular or ropy sediment, odorless, or having an odor due to the presence of the antiseptic used as a preservative. The liquid is sometimes more or less viscous. The Serum must come from healthy animals; must be sterile; must be free from toxin or bacterial products; and must not contain an excessive amount of preservative (0.5 percent. phenol or 0.4 percent. cresol, when such are used), and the total solids should not exceed 20 percent. Other requirements as under Serum Antitetanicum.

Serum Antitetanicum Siccum.—Dried Tetanus Antitoxin is obtained by the evaporation of either Antitetanic Serum or Purified Antitetanic Serum in a vacuum, over sulphuric acid, or by passing over it a current of warm air freed from bacteria. It should be kept in amber-colored glass containers free from air in a dark place at a temperature between 4.5° and 15° C. The Dried Serum is either in the form of orange or yellowish flakes or small lumps, or a yellowish-white powder, without odor. The Serum is readily soluble in nine parts of distilled water. The solution is opalescent and slightly viscous. For use the Serum should be dissolved under the most rigid asepsis, preferably in the original container. Dried Antitetanic Serum does not lose in potency, as the liquid Serum does. It is sometimes used as a dusting powder or for local application to infected wounds. Other requirements as under Serum Antitetanicum.

Virus Vaccinicum.—The pustules of vaccinia or cowpox removed, under aseptic conditions, from vaccinated animals of the bovine species. It should be kept in a dark place, at a temperature between 4.5° and 15° C. The vaccine pulp should be thoroughly rubbed up in a mortar or passed through a special grinder, strained to remove coarse particles, and made into a smooth emulsion with a glycerin solution. Vaccine Virus gradually loses in potency, the loss being more rapid at high temperatures than at low temperatures. Only such Vaccine Virus may be sold as has been prepared in establishments licensed by the Secretary of the Treasury of the United States. It is required by the law and the regulations now in force that the following requirements be observed. No Vaccine shall be used from any animal having a communicable disease, or suspected of having a com-

municable disease, other than vaccinia; animals used for propagating Vaccine Virus must be under daily veterinary examination for a period of not less than seven days before vaccination, and as soon as the vaccine pulp is removed a necropsy shall be made on each animal and permanent records kept of the same. Each and every lot of Vaccine Virus shall be examined to determine its freedom from pathogenic micro-organisms and a special examination must be made of each lot to determine the absence of tetanus spores or toxin, and permanent records must be kept of these examinations. The Virus must be marketed in sterile containers that comply with the requirements of the law and the regulations established by the United States Government mentioned above. Each package of Vaccine Virus shall bear upon the label the name, address and license number of the manufacturer and the date beyond which the contents cannot be expected to yield their specific results. The label should also contain the laboratory number of the Virus.

VOLATILE OILS.

The following article replaces the U. S. P. VIII text for Oil of Sweet Birch, Oil of Gaultheria and Methyl Salicylate.

Methylis Salicylas.—A product yielding, when assayed by the process given below, not less than 98 percent. of methyl salicylate ($CH_3C_7H_5O_3$=152.06). It is produced synthetically or obtained by distillation from Betula lenta Linné (Fam. Betulaceæ) or from Gaultheria procumbens Linné (Fam. Ericaceæ) and the source from which it is derived in every case must be stated on the label. Preserve it in well-stoppered, amber-colored bottles, in a cool place, protected from light. It is a colorless, yellowish or reddish liquid, having the characteristic odor and taste of Gaultheria. Specific gravity at 25° C.: Synthetic 1.180 to 1.185; when from Sweet Birch or Gaultheria 1.172 to 1.180. Boiling Point: 218° to 221° C. Synthetic Methyl Salicylate, or that from Sweet Birch, is optically inactive; when obtained from Gaultheria, it is slightly laevogyrate, not exceeding —1.5° in a 100 mm. tube at 25° C. Sparingly soluble in water; soluble in all proportions in alcohol and glacial acetic acid. It is soluble in 6 volumes of 70 percent. alcohol at 25° C. with not more than a slight cloudiness. The alcoholic solution is neutral or slightly acid to moistened litmus paper. A deep violet color will be produced by shaking a drop of Methyl Salicylate with about 5 Cc. of distilled water and adding a drop of ferric chloride T. S. Add 10 Cc. of potassum hydroxide T. S. to 1 Cc. of Methyl Salicylate, contained in a capacious test-tube, and agitate the mixture. A clear, colorless or faintly yellowish solution results, without the separation of any oily drops either on the surface or at the bottom of the liquid (other volatile oils or petroleum). It does not respond to the Volatile Oil Heavy Metals Test. *Assay for Methyl Salicylate:* Introduce about 2 Cc. of Methyl Salicylate into a tared flask, note the exact weight, add 50 Cc. of half-normal alcoholic potassium hydroxide V. S., connect the flask with a reflux condenser and heat the mixture on a water-bath during two hours. Then add a few drops of phenolphthalein T. S. and titrate the excess of alkali with half-normal hydrochloric acid V. S., noting the amount required. This shows, when calculated from the weight of the sample originally taken, not less than 98 percent. of methyl salicylate.

Oleum Amygdalæ Amaræ.—A volatile oil obtained by maceration and distillation from the ripe kernel of Prunus Amygdalus Stokes var. amara DeCandolle (Fam. Rosacæ), and from other kernels containing amygdalin, the source from which it is derived in every case to be stated on the label; yielding not less than 85 percent. of benzaldehyde and not less than 2 percent. nor more than 4 percent. of hydrocyanic acid. This Oil is intended for medicinal use; it is not to be used for flavoring foods. Specific gravity changed from "1.045 to 1.060" to "from 1.038 to 1.060" at 25° C. Added requirement: Refractive index: 1.5428 to 1.5439 at 20° C. "Optically inactive" changed to "optically inactive or dextrogyrate, not exceeding +0° 10′ in a 100 mm. tube at 25° C." Soluble in "equal volume of 70 percent. alcohol" changed to "dissolves, forming a clear solution, in 2 volumes of 70 percent. alcohol." The test for presence of hydrocyanic acid and the flame test for chlorinated products omitted. Added test: Add 10 drops of the Oil to a little alcohol, introduce a small amount of zinc dust and 2 Cc. of acetic acid and boil the mixture for a short time; no odor of phenyl isonitrile should develop after rendering it strongly alkaline with potassium hydroxide T. S., adding a drop of chloroform and heating (nitro-benzene). *Assay for Benzaldehyde:* Dissolve 3 Gm. of phenylhydrazine (not darker in color than pale yellow) in 50 Cc. of alcohol and titrate 25 Cc. of the solution with half-normal hydrochloric acid V. S., using methyl orange T. S. as indicator, to a distinct change in color. To about 1 Gm. of Oil of Bitter Almond, accurately weighed, add 25 Cc. of the phenylhydrazine solution just prepared and titrate the mixture after thirty minutes with half-normal hydrochloric acid V. S. as just described. The difference between the number of cubic centimeters of half-normal hydrochloric acid V. S. required in the two titrations, multiplied by 0.053 will show the weight of benzaldehyde present. Always freshly prepare the phenylhydrazine solution when required for the assay. *Assay for Hydrocyanic Acid:* Dissolve 15 Gm. of crystallized magnesium sulphate in enough distilled water to measure 100 Cc., add 5 Cc. of this solution to 40 Cc. of distilled water, 5 Cc. of half-normal sodium hydroxide V. S. and two drops of potassium chromate T. S. and titrate the solution with tenth-normal silver nitrate V. S., to the production of a permanent reddish tint. Pour this mixture into a 100 Cc. flask containing about 1 Gm. of Oil of Bitter Almond, accurately weighed, and titrate again with tenth-normal silver nitrate V. S. until a red tint, which does not disappear on shaking, is reproduced.

Oleum Anisi.—A volatile oil distilled from the ripe fruit of Pimpinella Anisum Linné (Fam. Umbelliferæ), or from the ripe fruit of Illicium anisatum Linné (Fam. Magnoliaceæ), conforming in name to the plant from which it is derived. Specific gravity: Changed from "0.975 to 0.988" to "from 0.978 to 0.988 at 25° C." Added: Refractive index: 1.5440 to 1.5600 at 20° C. "Laevogyrate up to —2°" changed to "optical rotation varies from +1° to — 2° in a 100 mm. tube at 25° C. (oil of fennel)." "Soluble in an equal volume of alcohol, forming a clear solution, also in 5 volumes of 90 percent. alcohol" changed to "soluble with not more than a slight cloudiness in 3 volumes of 90 percent. alcohol." Cool the oil in determining congealing point to 12° C. instead of 6° C. It does not respond to the Volatile Oil Heavy Metals Test as follows:

Volatile Oil Heavy Metals Test.—Shake 10 Cc. of the oil with an equal volume of distilled water and pass hydrogen sulphide through the mixture until it is saturated; no darkening in color will be produced in either the oil or the water (lead or copper).

Oleum Aurantii Corticis.—Obtained by expression from the fresh peel of Citrus Aurantium sinensis Gallesio (Fam. Rutaceæ) and its varieties. Added: Refractive index: 1.4723 to 1.4737 at 20° C. Dextrogyrate—"not less than 95°" changed to "not less than 94°." Added test: Introduce 50 Cc. of Oil of Orange Peel into a 200 Cc. three-bulb Ladenburg flask of approximately the following dimensions: The lower or main bulb 6 cm. in diameter with the smaller condensing bulbs 3.5 cm., 3.0 cm. and 2.5 cm. in diameter, respectively; with the distance from the bottom of the flask to the side arm 20 cm. Distil the Oil at the rate of one drop per second until 5 Cc. has been obtained. The angle of rotation of the first 10 percent. of the distillate thus obtained is equal to or slightly greater than that of the original sample. The refractive index of this first10 percent. of distillate is not less than 0.0008, nor more than 0.0015 lower than that of the original sample at 20° C. Nitrosolimonene test for added Oil of Turpentine omitted.

Oleum Cadinum.—Added specific gravity: 0.980 to 1.055 at 25° C. "Completely soluble in ether" changed to "Completely soluble in 3 volumes of ether, amyl acohol, chloroform, glacial acetic acid, or oil of turpentine, but only partly soluble in petroleum benzin." Added tests: One part of the Oil of Cade shaken with 20 parts of warmed distilled water and filtered, yields a filtrate which gives with a few drops of ferric chloride solution (1 in 1000) a red coloration. Portions of this aqueous filtrate reduce silver nitrate in the cold and Fehling's solution on heating. An aqueous filtrate from a mixture with Oil of Cade (1 in 20) produces no red coloration on the addition of a few drops of aniline (wood tar products); another portion of the aqueous filtrate is not colored by the addition of potassium chromate T. S. (coal tar products). Agitate 1 Cc. of Oil of Cade with 15 Cc. of purified petroleum benzin, filter the benzin solution, add an equal volume of copper acetate solution (1 in 20), shake the mixture and then allow it to separate. On adding an equal volume of ether to the separated bezin solution, it produces no intensely green coloration and does not become colored more than from a light yellow to brown (rosin and rosin oil).

Oleum Cajuputi.—Distilled from the fresh leaves and twigs of several varieties of Melaleuca Leucadendron Linné, especially the var. Cajeputi Roxburgh and the var. minor Smith (Fam. Murtaceæ). Rubric and assay for cineol content omitted. "Colorless or greenish liquid" changed to "colorless or yellowish liquid." Specific gravity changed from "0.915 to 0.925" to "from 0.912 to 0.925 at 25° C." Laevogyrate—"not exceeding —2°" changed to "not exceeding —4° in a 100 mm. tube at 25° C." Added test: It does not respond to the Volatile Oil Heavy Metals Test.

Oleum Cari.—Yielding not less than 50 percent., by volume, of carvone, "Soluble in an equal volume of alcohol, also in from 3 to 10 volumes of 80 percent. alcohol" changed to "soluble in 8 volumes of 80 percent. alcohol. *Assay for Carvone:* Introduce 10 Cc. of the Oil into a 200 Cc. flask, with a

long, graduated neck, by means of a graduated pipette, add 50 Cc. of a saturated solution of sodium sulphite, which has been carefully neutralized by means of acetic acid containing a few drops of phenolphthalein T. S., heat the mixture in a bath containing boiling water and shake the flask repeatedly, neutralizing the mixture from time to time by the addition of a few drops of diluted acetic acid. When no coloration appears, upon the addition of a few more drops of phenolphthalein T. S. and heating for fifteen minutes, bring the residual oil into the neck of the flask by the further addition of the sodium sulphite solution and ascertain its volume. The difference in volume between this residue and the volume of the original oil (10 Cc. multiplied by 10), is equivalent to the percentage by volume of the carvone present.

Oleum Caryophylli.—Distilled from the flower-buds of Eugenia Aromatica (Linné) O. Kuntze Jambosa Caryophyllus (Sprengel) Niedenzu (Fam. Myrtaceæ). Rubric changed from "80 percent." to "82 percent." of eugenol. Specific gravity: Changed from "1.040 to 1.060" to "from 1.038 to 1.060 at 25° C." Added test: Slightly laevogyrate, not exceeding —1° 10′ in a 100 mm. tube at 25° C. Tests with potassium hydroxide solution or ammonia water and with ferric chloride T. S. omitted. In the assay the mixture of 50 Cc. of potassium hydroxide T. S. and 10 Cc. of oil, after shaking it for five minutes, is heated on a water-bath for ten minutes to complete the reaction.

Oleum Chenopodii.—Distilled from Chenopodium ambrosioides anthelminticum Linné (Fam. Chenopodiaceœ). Added tests: Specific gravity: 0.955 to 0.980 at 25° C. It is laevogyrate, varying between —4° and —10° in a 100 mm. tube at 25° C. It is soluble in 8 volumes of 70 percent. alcohol.

Oleum Cinnamomi.—Distilled from the young twigs of Cinnamomum Cassia (Nees) Blume (Fam. Lauraceæ), rectified by steam distillation. Rubric changed from "75 percent." to "80 percent." of cinnamic aldehyde. Specific gravity changed from "1.045 to 1.055" to "from 1.045 to 1.063 at 25° C." "Almost optically inactive" changed to "optical rotation varies from +1° to —1° in a 100 mm. tube at 25° C.." Hydrogen sulphide test replaced by "It does not respond to the Volatile Oil Heavy Metals Test." Lead acetate test for rosin replaced by the following: Shake 2 Cc. of the Oil in a test-tube with from 5 to 10 Cc. of purified petroleum benzin and decant the latter. This liquid is colorless and does not give a green color upon shaking with an equal volume of copper acetate solution (1in 1000) (rosin). *Assay for Cinnamic Aldehyde:* Assay as for carvone under Oleum Cari.

Oleum Coriandri.—Specific gravity: Changed from "0.863 to 0.878" to "from 0.863 to 0.875 at 25° C." Optical rotation changed from "+7° to +14°" to "from +8° to +13° in a 100 mm. tube at 25° C." It is soluble in 3 volumes of 70 percent. alcohol. Solubility in 80 and 90 percent. alcohol omitted.

Oleum Cubebæ.—Optical rotation changed from "—25° to —40°" to "from —20° to —40° in a 100 mm. tube at 25° C."

Oleum Eucalypti.—Distilled from the fresh leaves of Eucalyptus Globulus Labillardière (Fam. Myrtaceæ) or from other species of Eucalyptus. Rubric changed from "50 percent." to "not less than 70 percent." of eucalyptol. "Soluble in all proportions in alcohol; also soluble in 3 volumes of 70 percent. alcohol"

changed to "soluble in 4 volumes of 70 percent. alcohol." Optical rotation omitted. *Assay for Eucalyptol* (replacing former assay): Introduce 10 Cc. of the Oil into a 100 Cc. flask with a long, graduated neck (cassia flask) by means of a graduated pipette, add enough of an aqueous solution of resorcinol (1 in 2) to fill the flask about four-fifths full. Shake the mixture thoroughly for five minutes and then bring the residual oil into the neck of the flask by the further addition of the same strength resorcinol solution, rotating or gently tapping the flask, if necessary, to cause the oil to rise to the surface. When the resorcinol solution has become clear (usually after standing for several hours) ascertain the volume of the residual oil. The difference in volume between this residue and the volume of the original Oil (10 Cc.) multiplied by 10, is equivalent to the percentage, by volume, of the eucalyptol present. When Oils are rich in eucalyptol, dilute the 10 Cc. taken for the assay with an equal volume of oil of turpentine, before applying the test, to avoid crystallization in the resorcinol solution.

Oleum Fœniculi.—Distilled from the ripe fruit collected from cultivated varieties of Fœniculum vulgare Miller (Fam. Umbelliferæ). Added test: Optical rotation varies from +12° to +24° in a 100 mm. tube at 25° C. "Soluble in an equal volume of alcohol; also soluble in 10 volumes or less of 80 percent. alcohol" changed to "soluble in 8 volumes of 80 percent. alcohol and 1 volume of 90 percent. alcohol." Congealing point changed from "not below 5° C." to "not below 3° C." Proceed as directed under Oleum Anisi, cooling the Oil to 0° C.

Oleum Hedeomæ.—Distilled from the flowering plant of Hedeoma pulegioides (Linné) Persoon (Fam. Labiatæ). Optical rotation changed from "+18° to +22°" to "from +17° to +28° in a 100 mm. tube at 25° C." Added to solubility requirement, "forming a solution showing not more than a slightly acid reaction with litmus."

Oleum Juniperi.—Distilled from the ripe fruit of Juniperis communis Linné (Fam. Pinaceæ). Specific gravity changed from "0.860 to 0.880" to "from 0.854 to 0.879 at 25° C." Added tests: The optical rotation varies from 0° to —15°, in a 100 mm. tube at 25° C. It is soluble in 4 volumes of alcohol with not more than a slight cloudiness.

Oleum Lavandulæ.—Distilled from the fresh flowering tops of Lavandula vera DeCandolle (Lavandula officinalis Chaix, Lavandula spica Linné) (Fam. Labiatæ). Specific gravity changed from "0.875 to 0.910" to "from 0.875 to 0.888 at 25° C." Added tests: The optical rotation varies from —1° to —10° in a 100 mm. tube at 25° C. Shake 20 Cc. of the Oil with 40 Cc. of 5 percent. alcohol and when the mixture has cleared withdraw 30 Cc. of the alcoholic solution. Neutralize this with half-normal potassium hydroxide V. S., using phenolphthalein T. S. as indicator, then add 5 Cc. of half-normal potassium hydroxide V. S., and heat the mixture on a water-bath under a reflux condenser during one hour. Not less than 4.7 Cc. of half-normal hydrochloric acid V. S. is required for neutralization after saponification.

Oleum Limonis.—Obtained by expression from the fresh, ripe peel of Citrus medica Linné variety Limonum (Risso) Hooker filius (Fam. Rutaceæ). Added test: Refractive index: 1.4744 to 1.4755 at 20° C. Optical rotation changed from "not less than +58°" to "from +57° to +64° in a 100 mm. tube at 25° C." Added test: The angle of rotation of the first 10 percent. of the Oil, obtained by

distillation, as described under Oleum Aurantii Corticis, is not more than 5° less than that of the original Oil. The refractive index of this first 10 percent. of distillate is not less than 0.0020 nor more than 0.0027 lower than that of the original oil at 20° C. *Assay for Citral:* (Replacing former assay.) Introduce about 15 Cc. of Oil of Lemon into a tared 300 Cc. flask, by means of a pipette, and note the exact weight; add 10 Cc. of a solution of phenylhydrazine (not darker in color than pale yellow) in alcohol (1 in 10), and allow it to stand for one-half hour at room temperature. Then add a few drops of methyl-orange T. S. and neutralize the liquid exactly by the cautious addition of half-normal hydrochloric acid V. S. If difficulty is experienced in detecting the end point of the reaction, carry the titration until the solution is distinctly acid, transfer it to a separatory funnel and draw off the alcoholic portion. Now wash the Oil with distilled water, adding the washings to the alcoholic solution, and titrate the latter with half-normal potassium hydroxide V. S. Carry out a blank test identical with the foregoing except that the Oil of Lemon is omitted, and note the amount of half-normal hydrochloric acid V. S. consumed. Subtract the number of cubic centimeters of half-normal potassium hydroxide V. S. from the number of cubic centimeters of half-normal hydrochloric acid V. S. used in the original test and this result from the corresponding number of cubic centimeters required in the blank test; each cubic centimeter of this difference corresponds to 0.076 Gm. of aldehydes, calculated as citral.

Oleum Menthæ Piperitæ.—Distilled from the flowering plant of Mentha piperita Linné (Fam. Labiatæ), rectified by steam distillation. Ester content in rubric changed from "6 percent." to "not less than 5 percent." Laevogyrate changed from "—20° to —33°" to "from —20° to —35° in a 100 mm. tube at 25° C." Solubility in alcohol and reaction to litmus omitted, and "no separation of oil globules" added to solubility in 70 percent. alcohol statement. Modified test: Distil about 1 Cc. from 25 Cc. of the Oil and pour the distillate on an aqueous solution of mercuric chloride (1 in 25); a white film does not form at the zone of contact within one minute (dimethyl sulphide—found in non-rectified oils). *Assay for Esters and Total Menthol:* Ten Cc. of the original oil is taken for the menthol assay instead of the washed residual oil from the menthyl acetate assay; otherwise the assay remains unchanged.

Oleum Menthæ Viridis.—Distilled from the flowering plant of Mentha spicata Linné (Menthæ viridis Linné) (Fam. Labiatæ). Added rubric: Yielding not less than 40 percent., by volume, of carvone. Laevogyrate changed from "—35° to —48°" to "from —35° to —50° in a 100 mm. tube at 25° C." *Assay for Carvone:* Assay as directed for carvone under Oleum Cari.

Oleum Myristicæ.—Specific gravity changed from "0.884 to 0.924" to "from 0.859 to 0.924 at 25° C." Added test: Optical rotation varies from +14° to +30° in a 100 mm. tube at 25° C. Modified test: Evaporate 3 Gm. of the Oil on a water-bath; not more than 0.06 Gm. of residue should remain.

Oleum Picis Liquidæ.—Specific gravity changed from "about 0.892" to "from 1.012 to 1.065 at 25° C." It is soluble in alcohol, the solution showing an acid reaction with litmus.

Oleum Pimentæ.—Specific gravity changed from "1.028 to 1.048" to "from

1.018 to 1.048 at 25° C." Added test: Its optical rotation varies from 0° to —4° in a 100 mm. tube at 25° C. "Miscible in all proportions in 90 percent. alcohol" changed to "soluble in an equal volume of 90 percent. alcohol." *Assay for Eugenol:* Assay as directed under Oleum Caryophylli.

Oleum Pini Pumilionis.—A volatile oil distilled with steam from the fresh leaves of Pinus montana Miller (Pinus Pumilio Haenke) (Fam. Pinaceæ). It is a colorless or faintly yellowish colored oil having a pleasant, aromatic odor, and a bitter and pungent taste. Specific gravity: 0.853 to 0.869 at 25° C. No portion of the Oil distils below 170° C.

Oleum Rosmarini.—Solubility in 90 percent. alcohol omitted. *Assay for Ester and Total Borneol:* Assay as directed under Oleum Menthæ Piperitæ, the Oil of Rosemary factors remaining unchanged.

Oleum Santali.—Optical rotation changed from "—16° to —20°" to "from —15° to —20° in a 100 mm. tube at 25° C." Soluble in 5 volumes of 70 percent. alcohol, forming a solution having a slightly acid reaction with litmus. Solubility in alcohol omitted. *Assay for Santalol:* Assay as directed under Oleum Menthæ Piperitæ, using the factors under Oil of Santal, but changing "11.026" to "10.926."

Oleum Sassafras.—Distilled from the root of Sassafras variifolium (Salisbury) O. Kuntze (Fam. Lauraceæ). Specific gravity changed from "1.065 to 1.075" to "from 1.065 to 1.077 at 25° C." Optical rotation changed from "not more than +4°" to "from +3° to +4° in a 100 mm. tube at 25° C." Added test: Soluble in 2 volumes of 90 percent. alcohol, forming a solution neutral to litmus.

Oleum Sinapis Volatile.—A product yielding, when assayed by the process given below, not less than 92 percent. of allyl iso-thiocyanate ($CSNC_3H_5$= 99.12). It is produced synthetically or obtained from the seed of Brassica nigra (Linné) Koch (Fam. Cruciferæ) (freed from fatty oil) by maceration with water and subsequent distillation, and must conform in name to the source from which it is derived. Added test: Optically inactive. Modified tests: The Oil completely distils between 148° and 154° C., and both the first and last portions have nearly the same specific gravity as the original Oil (alcohol, chloroform, petroleum, and fatty oils). The addition of a drop of ferric chloride T. S. to the Oil, diluted with several volumes of alcohol, does not produce a blue coloration (phenols). *Assay for Allyl Iso-thiocyanate:* Connect the flask with a reflux condenser when heating the mixture as directed in the assay for one hour—otherwise the process remains unchanged.

Oleum Terebinthinæ Rectificatum.—The freshly distilled Oil is to be dried by shaking it with anhydrous calcium chloride, and filtering. Specific gravity changed from "0.860 to 0.865" to "from 0.856 to 0.865 at 25° C." "No weighable residue on evaporation of 10 Cc." changed to "not more than 0.010 Gm. of residue."

Oleum Thymi.—Distilled from the flowering plant of Thymus vulgaris Linné (Fam. Labiatæ). Specific gravity changed from "0.900 to 0.930" to "from 0.894 to 0.929 at 25° C." Optical rotation—"not more than —3°" omitted. "Soluble in half its volume of alcohol and in 1 volume of 80 percent. alcohol" omitted; "soluble in 2 volumes of 80 percent. alcohol" retained. The test with ferric chloride to show a greenish-brown color omitted. *Assay for Phenols:* The assay is to be conducted in a flask with a long, graduated neck instead of in a burette.

BICHLORIDE OF MERCURY TABLETS AND BICHLORIDE TABLET LEGISLATION.*

GEORGE M. BERINGER, PH. M.

In presenting a paper on such a hackneyed subject as Bichloride of Mercury Tablets and Bichloride Tablet Legislation, I am well aware that I may be trying your patience on a subject that you may perhaps consider as threadbare. My association with and study of this subject, however, convinces me that this is not a dead subject, but that it contains several problems directly associated with the duties of the druggist and which pharmacists themselves, in a very large measure, must decide.

The extensive use of corrosive sublimate in this form has justified the decision of the Committee of Revision of the U. S. P. to introduce an official formula, and by this means to endeavor to provide additional safeguards to life in their use. The articles that have appeared in the medical, pharmaceutical and lay press, as well as the discussion in the committee, demonstrate that this is a live subject and associated with it are several questions still to be settled.

In the official recognition of the tablet of mercuric chloride, the U. S. P. is only following the example of most of the pharmacopœias that have been revised in recent years. A study of the foreign formulas and a comparison of these, and likewise of the commonly used American formulas, is interesting.

In American practice, either Wilson's formula, containing a mixture of mercuric chloride and ammonium chloride, or Bernay's formula, containing mercuric chloride and citric acid, have been almost exclusively used. In Europe the formula proposed by Angerer, for Pastilla Hydrargyri Bichlorati, has been the type followed. His formula is the following:

PASTILLI HYDRARGYRI BICHLORATI.

Mercury bichloride.		
Sodium chloride	aa	0.5 Kg.
Eosin		1.0 Gm.

Mix the salts and color the mixture with the eosin dissolved in water. Allow the mixture to dry in the air and compress into portions, weighing one or two grammes each.

The German Pharmacopœia IV (1900), and, again in the fifth edition (1910), adopts the title "Pastilli Hydrargyri Bichlorati" and directs that, from a mixture of equal parts of mercuric chloride and sodium chloride colored with a red coal tar dye, are to be made cylinders twice as long as thick and weighing 1 or 2 gm. each. Sublimate pastilles must be dispensed in sealed bottles labelled "Poison," and each pastille must be wrapped in black paper on which is printed, in white, the word "Poison" and the content of mercuric chloride stated in grammes.

The Swedish Pharmacopœia (1901) under the title of "Pastilli Chloreti Hydrargyrici" directed that "Sublimate pastilles" should be hard cylinders or prisms, weighing either 1 or 2 gm. each, and composed of equal parts of mercuric

*Read before the New Jersey Pharmaceutical Association, Lake Hopatcong, N. J., June 17, 1914.

chloride and sodium chloride and colored red by an aniline dye. It, likewise, introduced the requirement, that each tablet must be wrapped in black paper, on which was printed in white the word "Poison."

The Austrian Pharmacopœia (1906), under the title "Pastilli Hydrargyri Bichlorati Corrosivi," directed that equal parts of mercuric chloride and sodium chloride should be triturated to a thorough mixture and colored with a solution of eosin and compressed in pastilles weighing 1 gm. to 2 gm. The pastilles are directed to be dispensed in glass bottles, under a poison-label, and the pastilles are to be singly wrapped in black paper with the word "Poison" imprinted in white.

The Swiss Pharmacopœia, (1907), adopted as a title "Hydrargyrum Bichloratum Compressun," and, as a synonym, "Pastilli Sublimati." The formula is mercuric chloride 666 gm., sodium chloride 333 gm., eriocyanin, A, 1 gm., mixed and compressed into tablets weighing 37.5 cg., 75 cg. and 1.5 gm., and containing, respectively each 25 cg., 50 cg. and 1 gm. of corrosive sublimate. It directs that each tablet must be wrapped in black paper on which is printed, in white, the weight of the sublimate contained, the word "Poison" and a death's-head design.

The British Pharmaceutical Codex, in the first edition of 1907, and likewise in the 1911 edition, gave formulas for a series of these tablets. Under the name of "Solvellæ Hydrargyri Perchloridi,—Soluble Mercuric Chloride Tablets," and, as synonymous, "Antiseptic Perchloride, or Corrosive Sublimate Tablets,"—it directed a mixture of equal parts of mercuric chloride and sodium chloride colored with methyl violet, to be compressed into tablets containing 8.75 grains of the mercuric chloride, so that one dissolved in the imperial pint (20 fl. oz.) of water, will make a one-tenth percent (1 in 1000) solution of mercuric chloride. Under the title "Solvellæ Hydrargyri Perchloridi Fortes," or "Strong Soluble Mercuric Chloride Tablets," a tablet of the same percentage of essential ingredients, but double the weight, was directed, so that one tablet dissolved in twenty fluid ounces of water makes one-fifth percent (1 in 500) of mercuric chloride. Other formulas are given for a "mild" and for a "small" soluble mercuric chloride tablets, yielding, when dissolved as directed, solutions containing 1 in 4000 and 1 in 4500, the latter being especially recommended as suitable for ophthalmic purposes.

The French Pharmacopœia (1908), presented a new style of formula for use of mercuric chloride in antiseptic solution. Its formula for *"Papier au Chlorure Mercurique"* or "Charta hydrargyri bichlorati" directs that 5 gm. each of mercuric chloride and sodium chloride be dissolved in a sufficient quantity of distilled water to obtain a volume of 20 cc. Filter paper, purified by treating with water containing one part of hydrochloric acid to the thousand, washing with pure water and drying, is then saturated with the mercuric chloride solution, so that each rectangular surface, 5 cm. by 10 cm., shall imbibe 1 cc. of the solution and represent 25 cg. of mercuric chloride. The superscription "Corrosive Sublimate, twenty-five centigrammes," is directed to be printed with indigo-carmine, thus producing, when immersed in the proper volume of water, a blue solution. The paper is to be protected from light and moisture, and the container is to be labeled in indelible red letters "Poison."

These specifications of the *Pharmacopée Francaise*, official in that country since July 17, 1908, yields a product essentially the same as the corrosive sublimate leaflets now being made by an American manufacturer, who claims originality and the right to a patent thereon as a new and novel invention.

The Itailan Pharmacopœia (1909), gives the title "*Pastiglie di Cloruro Mercurico*," with the Latin synonym, "Pastilli Bichlorureti Hydrargyri." The formula is mercuric chloride and sodium chloride equal parts, colored with an aqueous solution of eosin, and compressed into circular pastilles of 1 or 2 gm. in weight.

It is to be noted that most of the foreign pharmacopœias, have, simply, followed in their titles the nomenclature proposed by Angerer, and designate these tablets as "Pastilles." In the same pharmacopœias, the title "pastilli" is frequently applied to mild remedial agents dispensed in the form of confections or lozenges. It is certainly an unfortunate designation and a dangerous classification that would include such a toxic form along with worm-lozenges, cough-troches, peppermint-drops, etc. It is still more to be regretted that it has been proposed to adopt this same title in the U. S. P. IX. The use of the word "pastille" in this connection is not in accordance with the English usage of this word. As defined in the dictionaries, the word "pastille" refers to several forms of substances of an entirely different character and dissimilar use.

The Century Dictionary defines "pastille" or "pastil"—

"1—a small roll of aromatic paste, composed of gum benzoin, sandal wood, spices, charcoal powder, etc., designed to be burned as a fumigator.

"2—a kind a sugared confection, usually of a strong flavor, of a round flat shape, like peppermint drops.

"3—in art: (a) a thin round cake of watercolor; (b) the method of painting with watercolors prepared as pastils or a drawing produced by them.

"4—In pyrotechny: a paper case filled with a burning composition intended to cause rotation of a wheel."

Neither of these definitions would comprise a mercuric chloride tablet of the shape described, or its intended use. In medicine and pharmacy, this title had already been pre-empted and used to a considerable extent for medicated confections, and its adoption, for such a toxic official preparation, is an exceedingly dangerous experiment. It was probably for this reason that the Pharmacopœia Helvetica adopted as its title, "Hydrargyrum Bichloratum Compressum," and the British Pharmaceutical Codex, "Solvellæ." The "Solvellæ" of the Codex, are compressed tablets or discs intended to be dissolved in water for external or local use. The attempt at classification here made, is a step in the right direction. The title coined, however, does not include the toxic character of the product, and, moreover, is subject to the criticism that it has the appearance of an attempt to imitate the trade-marked name of a certain brand of tablets extensively used in England.

The necessity is for a distinct title that will clearly differentiate between the medicinal tablets used so extensively for internal administration, and poisonous tablets intended for external use. The safeguarding of life is the first and principal consideration, and this warrants the coining of a new title, that shall distinguish the latter as a separate and distinct class. For this purpose, I propose *Toxitabellæ* as a distinctive class title, and as the official title for these

tablets, Toxitabellæ Hydrargyri Chloridi Corrosivi, and as the English, Poison Tablets of Corrosive Mercuric Chloride.

The foreign formulas follow the formula of Angerer, in directing equal parts of mercuric chloride and sodium chloride. The American manufacturers generally claim on their labels to adhere to the Wilson formula. Tablets containing the proportion of ammonium chloride directed in this latter formula, are prone to change on keeping. They deliquesce in humid atmospheres and the solubility also lessens with age. For these reasons, some of the manufacturers have already substituted sodium chloride for part of the ammonium chloride. One manufacturer advises that he has found preferable a mixture of corrosive sublimate 7.3 parts, ammonium chloride 2.7 parts, sodium chloride 5 parts. The entire replacement of the ammonium chloride by sodium chloride will doubtless yield a more stable and soluble tablet, and this change should be adopted in the pharmacopœial formula.

The coloring of bichloride of mercury antiseptic tablets, was originally proposed, not only to make them distinct in color from other tablets of the same shape and size, but the primal idea was to obtain a solution that would have a distinct color and not be mistaken and administered for harmless medications or for water. Such accidents had occurred and to prevent their recurrence, Angerer proposed, as an additional safeguard, that solutions of corrosive sublimate should be colored. It has been difficult to select a red dye that would possess sufficient tinctorial-strength, so that only a minute quantity of the coloring agent would be required, and at the same time would be permanent and not altered by the action of the chemicals nor fade on keeping. This problem has confronted the manufacturers and has been the subject of considerable experimentation on the part of the writer.

Eosin, in the quantity proposed, yields a tablet that is distinctly pink, but when in solution (1 in 1000) it does not show a distinct color. This practical difficulty with the red dyes, their variable shades, and, moreover, the fact that confections are frequently of this color and liquid medicines are likewise, commonly, some shade of red, has led to the use of other colors. The British Pharmaceutical Codex directs methyl violet, which, in this combination, gives a blue-purple solution. The Swiss Pharmacopœia orders eriocyanin A, the sodium salt of a suplhonated dye of the triphenyl-methane-carbinol type, that colors silk and wool a bright blue, and is only slightly affected by 10 percent. hydrochloric acid. The French Codex directs Indigo-Carmine for this purpose.

A number of the manufacturers are already giving preference to the blue tablets. One of these manufacturers writes: "Green and red-colored tablets are not at all satisfactory. I believe that you will agree with me that a somber blue would prove the most desirable. Confections are made in red, green, yellow, white and every conceivable color, but the blue is not attractive and, therefore, would in all probability prove the safest."

On the question of coloring for mercuric chloride, Dr. A. G. Rosengarten, whose firm prepares large quantities of mixed salts, already colored for the manufacturers, writes me:

"The only satisfactory color that we have found is blue dye, called indigo-

carmine. We have not yet found a satisfactory red or green dye, but I can highly recommend indigo carmine for consistent results, and a definite weight of that dye added to a definite weight of corrosive sublimate mixture, will produce definite results. I cannot say the same about the other dyes, and I think it will be most desirable to confine the dyes for corrosive sublimate mixture to the one color, blue, and the one dye, indigo-carmine."

My own experiments confirm these statements as to the availability of indigo-carmine for this purpose. 2.5 mg. per tablet is sufficient to color 500 Cc. of water a distinct blue. If a more intense color be desired, this can be increased up to 5 mg. and the quantity to be specified in the formula for 100 tablets should should not exceed .5 gm. In my experiments with red dyes, iod-eosin and alizarin carmine (sodium alzarin sulphonate) appear to have given the best results, with the Wilson type, but the color of the solutions is not as bright a red as might be desired. With the Bernay formula, containing citric acid, methylorange has shown the best results.

The official tablet should be adjusted to the basis of one tablet to 500 Cc. of water, yielding a 1 in 1000 solution, instead of one tablet to the pint, as has been the custom. This will necessitate only a slight increase in the weight.

The shape to be adopted for the official "Bichloride Tablets" is one of the questions that is being considered. When these tablets were introduced, the manufacturers, quite naturally, used the moulds already in use, and so the unfortunate mistake was made of manufacturing these poisonous tablets of the round or disc shape; the same shape and size as were used for innocuous medicinal tablets and confections. Fatal accidents, attributable in part to the shape, have demonstrated that it is imperative that this dangerous practice should be discontinued. Toxic tablets of the bichloride of mercury antiseptic type, should be made in a unique shape, one that has not been used for any other purpose, and the use of such a shape or form should be restricted, by legal enactments, to toxic tablets intended for external use.

In recent years, the ingenuity of the American manufacturer has been exercised to obtain a distinctive shape that should characterize and distinguish his brand of "antiseptic tablets." As a result, we now have such shapes as the triangle, diamond, square, cube, keystone, and clover leaf, exploited as proprietary forms of antiseptic tablets. Every one of these shapes has been commonly used in confections and their official recognition and continuance for bichloride antiseptic medication would be a repetition of the original fatal error as to the shape of such tablets. The manufacturers of these shapes are each clamoring for the recognition of his particular shape.

The influence of these commercial interests has been exerted to prevent legislative action that would designate an appropriate shape, or judicial consideration that would permit judgment to crystallize in favor of an official shape, that would insure the greatest amount of protection to life. After all, the question of "safety first" is the paramount question.

Of all the proposals for a shape for bichloride of mercury tablets, the coffin shape suggested by Mr. F. M. Apple in his paper before the Pennsylvania Pharmaceutical Association seems to be best. This has already been adopted by at least four manufacturers, and its general adoption has only been prevented by

the commercial interests back of other designs. Commercial instincts and financial advantage, and not the broad humanitarian principle of what is best to protect life, have been the causes actuating the opposition to legislation and to the official recognition of the best suggestion yet offered.

The German Pharmacopœia has been quoted, as an authority to be followed in fixing the U. S. P. standard. I believe that we should appropriate from the foreign pharmacopœias all that our experience and judgment prove to be correct and in accordance with American practice. In this instance, I cannot approve of following the *dictum* of the German Pharmacopœia. I have a sample of the official German Corrosive Sublimate tablets that have been in my possession since last March. These are not uniform in color and fading has commenced to take place. The shape is in conformity with that of the Ph. Gr., twice as long as broad, and the manufacturer to show this, and possibly to permit of economy, in using only half a tablet at a time, has made them with a ridge across the centre. This makes them resemble forms of the pink, linked phenolphthalein, and other proprietary, laxative wafers, that are so extensively used in this country. It would be difficult to conceive of a more dangerous experiment, than to officially recognize such a shape for bichloride tablets. It would be on a par with the adoption of the Italian Pharmacopœial standard of the round tablet, which we are now ready to condemn. There is no uniformity in the European pharmacopœias regarding these tablets, and so the argument, for the adoption of an international standard, falls flat. The solution of these tablets, when made of a strength of 1 to 1000, as commonly used, is of so delicate a pink tint as to be barely perceptible.

So far as I know, no American manufacturer has yet placed on the market, a bichloride of mercury tablet copied after that of the German Pharmacopœia. As this formula has been published for more than fourteen years, this is noteworthy, and may be construed as an evidence of the good judgment of our manufacturers. To now insist, that the U. S. Pharmacopœia should adopt and make legal, a shape that has not met favor in American practice, is a unique proposition that lacks the popular approval that is essential to its effectiveness.

The importance of throwing every safeguard possible around the sale and handling of such poisonous substances, is now thoroughly recognized. The newspapers have given wide publicity to the deaths, either suicidal or accidental, occurring from bichloride tablets. The evils resulting from the overzealous newspaper, which gives its readers all the details of the method by which some poor unfortunate has gone on the long voyage, have been discussed and decried, yet nevertheless it continues its course with little or no abatement.

A number of State legislatures, in session during the past year, have had under consideration, laws that would restrict the handling of such poison tablets, and which would define their shape, color and label, and further prohibit the use of the prescribed shape for any other purpose. There are, at least, three bills, on the same subject, now pending in Congress. It is certain that we may expect legislation before long on this entire matter, and it is eminently proper that the drug trade should take an active interest in solving a question of public safety that is so closely associated with our business. Unfortunately, the atti-

tude assumed by some of the druggists is that of thoughtless indifference. The argument advanced by others is that such legislation is only a passing sentimental fad and that it can have no influence on the protection of life. This is so fallacious, that it can not long continue to prevent legislation.

It was never expected that any legislation would prevent a person of morbid mind from committing suicide. This is not the purpose of the proposed legislative enactments, but it is contended that, in prescribing a distinctive shape for these poison tablets, they could under no circumstances be mistaken, either in the day or night, for harmless medications. If a distinctive shape had been supplied the Macon, Ga., banker and the Brooklyn business-man, whose deaths, beyond question, were accidental poisonings, at least these lives could have been spared. The necessity for a distinctive shape for Bichloride of Mercury Tablets is well shown by the compilation appearing in Public Health Report No. 46, by Martin I. Wilbert of the United States Public Health Service. In this compilation, Mr. Wilbert shows that, at that time, in the current price-lists of five leading pharmaceutical manufacturers, there were sixteen different formulas and varying sizes of poison bichloride tablets, five different shapes, five different colors, and only three, out of the sixteen, were then made of any other shape than the ordinary round tablet used for internal medication, such as headache and cold tablets. Could any stronger evidence of the necessity for restrictive legislation and a distinctive shape for these poison tablets, be presented, than this compilation in a government bulletin, which shows the present dangerous and unsatisfactory method of marketing these tablets?

The influence of certain manufacturers on proposed legislation, is shown in the act passed by the last session of the Maryland Legislature. Instead of specifying in the act a distinctive shape or color, the value of the legislation enacted is largely nullified by the amended form in which the bill was passed. This law provides that "tablets containing more than 1/10 grain of Mercury Bichloride, must be of either triangular, diamond, square, oblong or other irregular shape, and their color must be either blue, purple, or green, with the word "Poison" imprinted or embossed on each tablet." Further, these tablets can only be sold, dispensed or given away, in bottles, upon one side of which the word "Poison" has been blown, and with a label with the word "Poison" placed on the face of the bottle.

The restrictions regarding the package and labeling, are such as are comomnly employed by all of the manufacturers, but the very needed protection *to the consumer*, has been lost sight of, by the overpowering commercial-spirit that prevented the selection of a distinctive shape for the tablets. Any one of a number of shapes, is equivalent to no shape, and the very indefiniteness of the act as passed destroys its value as a measure for the safety of the public.

MAGNESIA MAGMA—MILK OF MAGNESIA, N. F.

SAMUEL T. HENSEL, PH. G.

While the formula for Magnesia Magma (Milk of Magnesia, N. F.) is calculated upon the basis of chemical equivalence, that is to say, the magnesium sulphate and sodium hydroxide are in molecular proportion; yet owing to the method of procedure given in the National Formulary, the resulting precipitate forms a semi-translucent, viscous mass, difficult to pour from a bottle, and far from being the snow-white cream which it is intended to obtain.

President George M. Beringer, published an article, about a year and a half ago, in the *Journal of the A. Ph. A.*, in which he laid down the fundamental principles necessary for success in the manipulation of this process and I am indebted to his article, for the success I have had in the manufacture of this preparation.

The principal features of Mr. Beringer's process are as follows:

First—That the solutions of magnesia sulphate and sodium hydroxide must be brought to the boiling point before mixing.

Second—That the solutions should be mixed in reverse order to that given in the National Formulary; the magnesium sulphate solution being slowly added in a fine stream, with continued stirring, to the solution of sodium hydroxide.

Third—That the sodium hydroxide must be in excess to the extent of 10%.

Fourth—Distilled water is directed.

My experience in the manufacture of this preparation has led me to make two changes in the process, first, with respect to the percentage of sodium hydroxide used, and second, as to the nature of the water employed for the purpose of washing the precipitate.

In the course of my experience, I first observed that the amount of the precipitate obtained, was not constant. The cause of this I traced to a variation in the strength of the sodium hydroxide that I was using, this being the product of three different manufacturers.

I then found that in order to wash the precipitate with distilled water until the supernatant liquid should no longer become cloudy upon the addition of a drop of T. S. Barium Chloride, would increase the cost of production to such a point as to make its use prohibitive.

I, therefore, increased the amount of sodium hydroxide to 12%, and on some occasions to 15%, and also adopted the use of water supplied by our artesian well, which is of exceptional excellence, and which furnishes one of the best potable waters to be found anywhere.

The foregoing reasons have therefore prompted me to make the following modifications.

First—Owing to the variations in yield of precipitate obtained by the use of different samples of sodium hydroxide, I have increased the amount indicated by the theoretical molecular formula, from 12 to 15%. This ensures that when

the residual product is reduced to a volume of 1000 Cc., as directed by the National Formulary, each fluid ounce will contain 24 grs. of magnesium hydroxide $Mg(OH)_2$.

Second—Artesian water is used for washing the precipitate to the amount that each gallon of magma is washed with about twenty-eight gallons of water.

In preparing the solutions necessary for one gallon of magma the magnesium sulphate is first dissolved in one gallon of water, the solution filtered and then boiled. The sodium hydroxide is dissolved in 6 pints of water, and this solution filtered and boiled. The solution of magnesium sulphate is then poured, in a thin stream, and with constant stirring, into the solution of sodium hydroxide, and the resulting mixture boiled vigorously for 15 minutes or more. There is no danger of over-heating the mixture, for the reason that the magnesium element can be exposed to a far greater degree of heat than can be imparted by boiling, without injury.

After the mass has been thoroughly boiled, the mixture of the solutions is diluted with water to 5 gallons, and allowed to stand for twenty-four hours, or until subsidence has taken place to about the one gallon level, which should be previously marked on the container. The exact level is unimportant, however, as my experience demonstrates that the quantity indicated above, will reach its maximum level in twenty-four hours. The supernatant liquid is then carefully drawn off by means of a rubber tube syphon; fresh water is added, and the washing continued in this manner for the requisite time.

The reaction which takes place in this process is represented by the following equation:

$$MgSO_4 + 7H_2O + 2NaOH + 3H_2O = Mg(OH)_2 + Na_2SO_4 + 10H_2O.$$

The following equation indicates that the molecular quantities of the N. F. are theoretically correct, but the peculiarities of mass-action were evidently not considered; these however, are governed by concentration, temperature and various other influences, which can only be overcome by experience in operative work.

	Grams		Combined Mol. Wt.	Water
$Mg\,SO_4 + 7H_2O$	250		244.69 +	$3\,H_2O$
	———	=	———	
$2NaOH$	81		79.52	

A striking illustration of chemical action bearing upon this subject is revealed during the preparation of zinc iodide ZnI_2. If we take the atomic weight of metallic zinc 64.9, and mix it with the combining atomic weight of iodine 125.9 $\times 2$, introducing these two substances into a flask together with a half fluid ounce of distilled water, there will be an immediate re-action, shown by the color which will deepen and become more and more intense as the re-action proceed; followed in a few minutes by an appreciable increase in temperature, up to a certain point, when the heat of the re-action is suddenly enormously increased, and a portion of the iodine is volatilized, as is indicated by the violet-colored vapor which is evolved; the whole mixture in the meantime, becoming involved in violent ebullition. The temperature then gradually subsides, the mass be-

comes cold, chemical action ceases, and no amount of subsequent agitation will discharge the color of the iodine, although it is still in the presence of uncombined metallic zinc.

The cause of the suspension of chemical reaction in the above mixture is due to three conditions, namely, concentration of the solution, diminution of the area of the surface of the metallic zinc, and absence of heat.

If, on the other hand, we employ a considerable excess of metallic zinc, using the atomic weight of iodine as before, the very largely increased area of zinc-surface exposed to the action of the iodine, enables combination to proceed regardless of concentration, up to the point of the complete discharge of the iodine color, thus indicating complete chemical union of the two elements.

In the case of Magnesia Magma, for the same reason, chemical equivalents should not be used; but we must have an excess of sodium hydroxide, in order that the magnesium sulphate may be completely decomposed. This is evident from the amount of that salt found in the supernatant liquid when less than an excess of sodium hydroxide is employed.

URINE ANALYSIS; QUANTITATIVE ESTIMATION OF GLUCOSE.

JOSEPH L. MAYER.

Any one who has occasion to make many quantitative determinations of sugar in urine, is aware of the necessity of having a rapid, accurate and easily applied method of analysis.

Shortly after the publication of Benedict's paper, "The Detection and Estimation of Glucose in Urine" I began experimenting with the object of ascertaining the accuracy of the method.

The sugar in a sample of urine was determined volumetrically by employing the following modification of Benedict's method, which I suggested in a paper read at the last annual meeting of the American Pharmaceutical Association (Journal A. Ph. A., May, 1914, page 687).

Into a 100 cc. Erlenmeyer flask, with cord wrapped around the neck to prevent burning the fingers, pour 25 cc. of accurately measured Benedict's Quantitative Solution, add a few grammes of crystallized sodium carbonate and place on the hot plate. When the solution is boiling, gradually add the sugar solution from a burette, with sufficient slowness to allow the reaction to proceed, putting the flask back on the hot plate until disappearance of color.

The sugar in this same sample, was then determined gravimetrically, by the following method of Defren-O'Sullivan (Leach, Food Inspection and Analysis, 2nd edition, page 564):

Mix 15 cc. of Fehling's Copper Solution with 15 cc. of the Tartrate Solution in a quarter liter Erlenmeyer flask and add 50 cc. distilled water, place the flask and its contents in a boiling water bath and allow them to remain five minutes, then run rapidly from a burette into the hot liquor in the flask, 25 cc. of the sugar solution to be tested (which should contain not more than one-half percent

*Read before the New York State Pharmaceutical Association, June 23, 1914.

of reducing sugar). Allow the flask to remain in the boiling water-bath, just fifteen minutes after the addition of the sugar solution, remove, and with the aid of a vacuum, filter the contents rapidly into a platinum or porcelain Gooch Crucible containing a layer of prepared asbestos-fiber about 1 gm. thick, the Gooch, with the asbestos, having been previously ignited, cooled, and weighed. The cuprous oxide precipitate, is thoroughly washed with boiling distilled water until the water ceases to be alkaline.

(The asbestos should be of the long-fibered variety and should be especially prepared as follows: Boil first with nitric acid (sp. gr. 1.05 to 1.75) washing out the acid with hot water, then boil with a 25 percent solution of sodium hydroxide, and finally wash out the alkali with hot water. Keep asbestos in a wide-mouthed flask or bottle, and transfer it to the Gooch, by shaking it up in the water and pouring it quickly into the crucible while under suction.)

Dry the Gooch with its contents, in the oven, and finally heat to dull redness for fifteen minutes, during which the red cuprous-oxide is converted into the black cupric-oxide. After oxidation as above, the crucible is transferred to dessicator, cooled, and quickly weighed. From the milligrams of cupric oxide, calculate the milligrams of dextrose from table accompanying the method.

The results by both methods were as follows:

Gravimetric	2.806%	sugar
Volumetric	2.777%	sugar
	.029%	difference

Another sample of urine tested by the same methods contained, by the

Gravimetric method....	6.34 %	sugar
Volumetric method.....	6.29 %	sugar
	.05 %	difference

These results clearly indicate that the volumetric method of Benedict modified as above, while rapid and easily applied, is capable of yielding just as accurate results as the longer gravimetric method.

I am now conducting a series of experiments, to determine the relative accuracy of all the methods commonly used to quantitatively determine glucose in urine, and hope in the near future to publish the results of same.

THE SIXTY-FIFTH ANNUAL SESSION OF THE AMERICAN MEDICAL ASSOCIATION.

M. I. WILBERT, PH. M., WASHINGTON, D. C.

The 1914 meeting of the American Medical Association was held in Atlantic City June 22-26 and 3,958 members registered as present at the convention. This registration is reported to have been considerably larger than that of any of the previous sessions of the Association in Atlantic City. The work of the House of Delegates and its committees, and the proceedings of the several Sections of the Association are reported at length in the Journal of the American Medical Association for July 4, 1914, v. 63, p. 73-130. The scientific papers, because of the restrictions imposed by the House of Delegates at the Minneapolis meeting, were fewer in number than in former years but the subject matter dis-

cussed was correspondingly good, the programs for the several Sections being generally well carried out.

The Section on Pharmacology and Therapeutics had as usual a program containing many papers of pharmaceutical interest. Delegates from the American Pharmaceutical Association were recognized and Prof. Joseph P. Remington, the Chairman of this Delegation, in extending the felicitations of the organization he represented, said:

"The American Pharmaceutical Association brings greetings to the American Medical Association. It is meet and proper that two National bodies should exchange greetings for however they may differ in function and scope, they are united in principle in the one great object of promoting the health of the Nation in combating disease.

"It is gratifying to know that the Pharmacopœia is practically completed so far as the bulk of the work is concerned. The printing of the Appendix with the Tables, Reagents and Volumetric Solutions will be sent to the printer this week, for this part of the book must be printed first, in order that members may have it for reference in checking up the text of the book.

"During the past year a number of older remedies have been deleted and new remedies admitted. The Committee on Scope, which reports upon proposed admissions and deletions, have finished their work but there are still a few questions which can be settled after the printing is started. One of these questions is the form of so-called Bichloride Tablets. As is well known, the enormous use of these Tablets is a menace to the future growth and prosperity of the Nation. The Pharmacopœia cannot check the use of these Tablets, but it can at least direct the form for their use which will tend to prevent accidental administration.

"The American Pharmaceutical Association during the past year has used its influence in every possible way to control and limit the use of habit-forming drugs.

"The body which I have the honor to represent, asks the assistance of your body to aid in framing wise laws which will make it difficult for 'dopesters' to continue their habits, and to limit the use of these drugs to the legitimate use of properly educated physicians.

"In educational matters Pharmacy has progressed by raising the standard of education of those entering Pharmacy, and enlarging the curricula of the colleges. May we not hope that Medicine and Pharmacy will be more closely linked in the future, and that crimination and recrimination will cease, or take the form of constructive criticism, with the intention of remedying the evils and correcting abuses, and inculcating harmony between the two professions."

Referring more particularly to the probable scope of the U. S. P. IX, the following table represents its status at the present time:

Number of articles in text of U. S. P. VIII	958
U. S. P. VIII articles deleted in Revision	237
U. S. P. articles retained in Revision	721
Number of new articles admitted to U. S. P. IX	67
Total number of articles in tentative list of U. S. P. IX	788

On motion of Dr. Murray Galt Motter, of Washington, D. C., the Section on Pharmacology and Therapeutics of the American Medical Association, adopted the following resolution which was referred to the House of Delegates, and endorsed by that body, thus becoming officially recognized as the opinion of the American Medical Association:

"WHEREAS, The Pharmacopœia of the United States of America should be, above all, a book designed to protect the public health and prevent the exploitation of the sick and afflicted for profit; now, therefore be it

"*Resolved*, That the members of the Section on Pharmacology and Therapeutics of the American Medical Association, request the House of Delegates to urge upon the Revision Committee, to make official in the Pharmacopœia of the United States 'corrosive mercuric chloride pastilles' so that physicians may not be compelled to prescribe this remedy under a proprietary name; be it further

"*Resolved*, That this Section endorses the form and description of corrosive mercuric chloride pastilles, as described in the German Pharmacopœia, namely, of cylindrical shape, twice as long as thick, wrapped individually in paper bearing the name of the medicament 'corrosive mercuric chloride pastilles' and the word 'poison' in suitable and striking letters; be it further

"*Resolved*, That a copy of this resolution be forwarded by the Secretary of the American Medical Association to the President and to each of the officers of the United States Pharmacopœial Convention and also to the Chairman and to each member of the Committee of Revision of the Pharmacopœia of the United States."

Of the many papers presented in the Section on Pharmacology and Therapeutics the following contributions were of more immediate interest to pharmacy:

Dr. John F. Anderson, the Chairman of the Section on Pharmacology and Therapeutics, in his address, discussed some unhealthy tendencies in therapeutics and referred more particularly to the ill-advised use of certain biologic products such as the Friedman vaccine for tuberculosis, and crotalin in the treatment of epilepsy. In summing up this paper, he suggested that, while advances in therapeutics are necessary and clinical trials must be made, these trials should be with adequate controls of otherwise treated cases, and under circumstances in which every stage can be watched and the various clinical and laboratory observations be made a matter of unbiased record and the best interests of the patients thus safeguarded. It is difficult to secure these conditions outside of a well-equipped hospital. Until a new method of treatment has received abundant confirmation of this sort it is unjust—to use no stronger word—to apply it promiscuously to patients who are not under constant observation and are not amenable to instant emergency relief.

In a paper on "The Medical Treatment of Chronic Intestinal Stasis," W. A. Bastedo, of New York, discussed the uses and limitations of many of the aperients and cathartics. In commenting on the now widely-used paraffine oil, he called attention to a series of ten samples, not one of which complied strictly with the requirements of the Pharmacopœia, and also stated that, in writing prescriptions for paraffin oil or liquid petrolatum, it is unfortunately true that it is practically necessary to specify some established brand, as the material supplied in retail drug-stores very seldom, if ever, complies with the requirements of the Pharmacopœia.

In a paper on Active Immunization in Diphtheria by toxin-antitoxin mixtures, William H. Park, of New York, reported on recent progress in the prophylaxis of diphtheria, and reviewed the present-day knowledge regarding immunization, and the possible recognition of immunization by skin reaction.

In a paper on the use of diphtheria antitoxin in the treatment of diphtheria, Samuel S. Woody, of Philadelphia, recommended the administration of much larger doses than are used at present, and stated that the number of antitoxin units to be administered, should be in keeping with the stage of the disease. He said that, as a prophylactic diphtheria antitoxin was uncertain, and in a great measure unsatisfactory in its results, and that to be efficacious in the treatment of diphtheria, antitoxin must be given at the earliest possible moment and in large doses.

In addition to the resolution endorsing the inclusion of pastilles of corrosive mercuric chloride in the Pharmacopœia of the United States, the House of Delegates also adopted the following recommendation of pharmaceutical interest, suggested by the Council on Medical Education and endorsed by the reference committee:

"Your committee also recommends that the Council be instructed to urge all medical colleges to adopt the nomenclature of the Pharmacopœia of 1910 and to use the metric system in their teaching."

The scientific exhibit was of unusual interest and the work displayed was not alone excellent, but much of it was of immediate practical value to the profession. The commercial exhibit attracted considerable attention, and was unusually free from objectionable features in the way of proprietary and semi-proprietary preparations not recognized by the Council on Pharmacy and Chemistry.

The officials for the Section on Pharmacology and Therapeutics for the coming year, are: Chairman, R. H. Hatcher; Vice-Chairman, J. Ray Arneil; Secretary, M. I. Wilbert; Delegate, John F. Anderson, and Alternate, Ray L. Wilbur.

At the opening meeting of the Association on Tuesday morning, Dr. Victor C. Vaughan, of Ann Arbor, Michigan, was installed as President, and at the concluding session of the House of Delegates, on Thursday afternoon, Dr. Wm. L. Rodman, of Philadelphia, was selected as the president-elect and San Francisco chosen as the place of meeting for 1915.

BEEF IN 1740.

A writer in the Yale Review who notes that in 1740 beef could be bought in Boston at twelve cents a pound seems to imply that that price was all it was worth. "Invariably a steak for dinner was heralded by the vigorous pounding with the potato masher wielded by the stalwart arm of the cook." The meat, in fact, often came, he tells us, from the carcass of "a cow that no longer gave milk or a bull that had lost its bloom." Still there were many Englishmen in Boston in the eighteenth century, and they must have been able to obtain somewhere roast beef that was worthy of their exacting palates.

ADDRESS TO THE GRADUATING CLASSES OF THE COLLEGE OF PHYSICIANS AND SURGEONS, SAN FRANCISCO, JUNE 4, 1914.*

R. CADWALLADER, A. M., M. D., PROFESSOR OF OBSTETRICS AND ASSOCIATE PROFESSOR OF ABDOMINAL SURGERY, COLLEGE OF PHYSICIANS AND SURGEONS OF SAN FRANCISCO.

It has been twenty-one years since I took my degree in medicine and twenty-five since I first began its study. During this time more radical changes have taken place than in any equal period of recorded history. I began my work in a rural community, in competition with men far older than I, who were typical old-school practitioners. Bridging then, as I do the past, pre-aseptic days with the present aseptic school, it seems natural for me on such an occasion as this to grow reminiscent. Allow me therefore to picture to you the physician of the past, then point out a few of the peculiarities of the present and, with the aid of both the past and the present, forecast the type of man who will be successful in the future.

The doctor of the old school is almost an extinct species. A few yet remain on the outskirts of civilization. They have been shot at so often that they have become very retiring and shy. Like the buffalo and the grizzly bear, the encroachments of modern life have pushed them to the background where a few forgotten specimens eke out a precarious existence, although their race is run.

He was as a rule an ambitious farmer boy with a mastery of Ray's Fourth Part Arithmetic, McGuffey's Sixth Reader and Webster's blue-backed speller. He entered into an understanding with the nearest doctor and became his friend, pupil, attendant, hostler, and general factotum for a term of apprenticeship. He boiled down the home-made drafts, mixed the salves, assisted at bone-settings, read the four volume library consisting of Gray's *Anatomy*, Megg's *Obstetrics*, Flint's *Practice*, Gross's *Surgery*, and possibly Dalton's *Physiology*, and had his powers of observation stimulated and quickened under the tuition of his chief. After a few years he went to the nearest city for two winter-courses of six months' each, in some medical college, where he saw operations, did some dissecting and followed the bed-side teaching of a few prominent men. This was in those days thought to be a very thorough course. He then returned home, by agreement took over a lot of the practice of his preceptor, often married the latter's daughter, and the two men remained in close intimacy for years.

His practice was rural and scattered over many miles of country. Calls were made by horse and cart, or on horseback, according as the state of the roads permitted and all his drugs were carried in saddle-bags. Few, very few, ever remained in the cities or wished to do so. The growth of urban population is recent in our history. In my boyhood I saw the trains of prairie schooners that settled Kansas and from my father's place the unconfined range stretched westward to the Rocky Mountains.

*From the Pacific Medical Journal.

For at least twenty miles in all directions, often for a hundred, he alone was the dependence of the community in accident and sickness. He had to be familiar with every road, by-path, gate and ford in all that region, not only by day but in the darkest night, in rain, sleet, hail, snow, slush and mud. Swollen streams had to be forded, avoided, or swam. He had to know the possibilities of getting through and take the shortest practicable route to and from the home of sickness. No white-handed, soft-nurtured man could endure these hardships. His clothing was not of broadcloth and he never owned a silk hat or became addicted to cigarettes. He dressed in rough clothing and wore boots.

As he sprang from the people, so he went back to the people—to his own family, friends and neighbors and he had their welfare close to heart. His was a genuine love for them as well as for his life-work. The community instinctively recognized this and turned to him naturally for sympathy and help in sickness and distress, nor turned in vain. It was some such man, known and appreciated, that gave McLaren his inspiration for the character of William McClure.

Entering therefore into the closest relationships of life with his families, the physician of the past could, and usually did, wield a tremendous influence for weal or woe. The preacher, the doctor and the schoolmaster were the educated men of the hamlet. Magazines were nearly unknown and always very expensive, the literature obtainable was mainly limited to the omnipresent *Bible* and *Pilgrim's Progress*. This was not perhaps a loss, when we consider the mass of worse than trash now flooding the country. Newspapers were not in general circulation. Politics was taught from the stump, and by debates; seldom if ever were speeches deliberately read.

The doctor then was a power. His name was used to frighten bad children by threats of his mammoth doses of nauseous drugs, and his example was held up to all as a model of grace to emulate.

Such an education and life led to an exceptional cultivation of the observant faculties. His hospital-training was nothing to speak of and he had for years to keep learning until the early habit thus formed became a rule of his life. Right here is the secret of true progress—constant application and addition to the sum of knowledge by observation.

For nursing the sick he had to depend upon the neighbors when the family became tired out. It was thought to be a duty to sit up with the sick. I have known men and women to work hard all day and stay up all night with a neighbor, neglecting their own work and families, even when the afflicted was an enemy. They would have been much surprised had such acts been favorably commented upon. They did it—nay, thank God, they do it still—in numberless places. I have seen a life-long enemy who had quarreled and lawed many years, lay all this aside when his opponent's crushed body had to be taken over country-roads to the railroad, and beyond, for more skilful treatment. I have seen him stop his pressing work, go with all his hired men to shovel dirt over the jutting rocks and smooth the wheel tracks for the passage of a man to whom he would not have spoken a week before. Beneath the petty jealousies of life, beneath the anger and misunderstandings there are depths of feeling in our people that link them to the angels.

What these volunteer nurses lacked in training they made up in willingness, in cheerful service of any kind, in a life-long knowledge of the patient's whims and fancies. Often the women would slip over at such times and do all the housework for a day, get out a washing or do the ironing, send in the cooked food for weeks—all that the mother might have the time to hang over the bedside of a dying child. The beauty of this is that it is not uncommon or any credit taken for it—it was done regularly, quietly and for the transient stranger in his canvas-covered wagon as well.

The therapeutic agents used by the old doctor were never compounded with much regard to taste. There was a popular idea that to be effective the medicament must be black and bitter. I have had to add a little quinine to many a prescription before the patient felt that he was getting what his illness needed. No small dose was ever thought to be as powerful as a draught. Tincture Asafœtida in teacupful doses was what was expected in hysteria and is not bad treatment to-day if coupled with a casual remark that the dose will be repeated in ten minutes if the patient does not feel better. One favorite in the spring was something like this: ten cents worth each of orris, powdered rhubarb, and dandelion roots, quinine, senna leaves, the bile from a fresh ox-gall in a quart of the very best whiskey—to be well shaken each time and the dose a wineglassful before meals. In most cases it worked beautifully, by lessening the appetite considerably.

A mild laxative which the children were expected to take was a tablespoonful of sorghum molasses stirred stiff with sulphur. To thin their blood in the spring, considered very indispensable, a teaspoonful of cream tartar was given. Sassafras tea was used exclusively for about forty penitential days every spring, and goose-grease, skunk-oil and turpentine held honored places in every cupboard. Straight galenicals alone were used and given absolutely empirically in the cases that experience had taught that they produced results.

The doctor was also the dentist. He never wasted valuable time in filling teeth but pulled every one that ached. Nor did he have an elaborate array of universal forceps. The old men had a hook and tackle that went over a tooth and flipped it out when operated by a ratchet. The men just preceding my time, had one or two pair of forceps and a shoemaker's awl for stumps, and generally got it out. Even bullet-moulds or pliers were impressed at times.

This old-school physician was not a specialist, far from it. Nor do I know exactly what a specialist is myself. Sometimes it seems as if he were a man who, while not knowing any more than any one else of some subject, knows nothing of any other. They were familiar with, and treated everything from abscess to zoster—they certainly had a broad vision. Statistics are not available, but I doubt whether the death-rate was very much higher then than now. The better treatment of to-day is offset by the poorer food, more unhygienic surroundings and the greater stress of life.

The principal evil he had to combat was the utter ignorance of the people on all sanitary and health measures. Superstition still lingers in many forms, but is not comparable with what was acted upon in those days. Potatoes had to be planted and butcherings done, by the moon, veterinary-surgery by the sign, and every

house had one or more almanacs behind the kitchen stove, each with its St. Sebastian-like figure on the front page.

Medicines were thought to be antidotal. The right dose "knocked out" the disease which was an entity. Cancer, for example, was a foreign body with long decapodia-like tentacles that dug into the victim and sapped his vitality. Patent medicines and Thompsonian remedies were implicitly believed in and taken by everybody in dozen-bottle lots. There was always a mad-stone, just in the next county, that sucked the poison from the mad dog's bite. When it had got it all, it would then drop off, and could be purified and made ready for the next case by boiling it in fresh milk; the milk turning green and often reported as killing a hog which carelessly had drank it up. Boils were thought to be good for a man, as removing bad humors from the blood. These were the days of blisters, bleeding, cupping and purging.

The doctor gathered many of his own medicines and boiled them down, on his office-stove, into drafts or poultices. He prepared his own surgical-dressings and held the sutures *in his mouth* until ready to put them in.

When I began my practice it was alongside of just such men as I have described. One of these used to wear home-made clothes of jeans, and his wife put in a row of four or five watch pockets, in which he carried calomel, gamboge, jalap and leptandrin. No matter what the complaint, the first demand was to see the tongue. Then he would take a pinch from each pocket, place in the palm of the left hand, and, with the aid of saliva, roll up a pill to be taken at once. I know the trials, the joys and the exposure of a country practitioner. That experience I would not exchange for any equal years since, so valuable were the lessons it taught me. It was hard to endure them, but now I know the meaning of that couplet, *"Forsan et haec olim meminisse juvabit."* (Perchance even these things it will be delightful to remember.) But for you, Oh! past generation, with all your faults, I have nothing but profound respect. Those men, certainly, had the golden triad of self-reliance, observation and sympathy for the suffering all around them.

The physician of to-day is a far better educated man. As a rule, he has one or more years of college-training added to a four years' course in a high-school and then four annual courses of professional training of nine months each. Often to this is added a year of interneship or study abroad. Nor is he any too well *crammed* then, when he gets out. Instead of four years of medical study on a broad basis, we teachers waste at least one year in scientific studies that must be known, but which could better be taught before the real study of medicine is begun. By the time the young man is through with our modern six or seven years' work he is heartily sick of it all. Nor is the student crowded from the start as he should be. Any teacher knows that the whole four years could well be done in three, if continual and industrious study were enforced from the beginning. This long course means a decision too early in life, by a boy, immature, and unable accurately to decide what his bent really is. Too often the determination is made by parents, and results in another physician the more, who is temperamentally and mentally in friction with his calling.

The old-school doctor started his study because of a genuine love for the work

and at a mature age. He therefore learned faster, applied himself better, and his two short years were no doubt the equal of any two of to-day. Could I have the determining voice I would require better preparation, not longer in years of study, but in the subjects taken. Physics, chemistry, biology, etc., should all be mastered before the real work begins. It matters not where these are gained whether in a high school or a full college course, although a full college course is to be desired. He ought to be able to read one foreign language certainly. The trouble with our preliminary work is the inherited mediæval, scholastic ideal that sees no value in anything useful. Were the proper arrangement made the boy could get all this in a high-school. The requirement for entering a medical-school ought to be based on the subjects not on an arbitrary number of hours spent in what is often worthless as a preparation. I would not have him go directly to the medical college, but engage for a year or two in some employment, until his real desire to devote himself to medicine became a result of deliberate choice. We teachers can tell, every time when we get a student who has buffeted the world for a few years before starting medicine. He knows what he is there for, he is there to fit himself for a real life of which he knows something, and he is wasting no time in getting it. He is the man who keeps steadily at work, to whom graduation is not some far off point, with an unknown vista beyond. To such a man three years of medical study is sufficient, if to it a required year of interneship is superimposed. If such a man begins his work at twenty-six or twenty-seven, it is soon enough, for medicine requires a maturity of mind seldom acquired earlier.

Our present schools are tending to paid instructors. Now a paid instructor never will or can be an enthusiast in any but one narrow field. He cannot know the medical requirements if he excels and limits himself to one line. He must spend his time in the repeated and wearying grind of hammering in basic principles, or else he must devote himself exclusively, as the majority do, in so-called research-work after the plan of our German *confreres* to the glory of his college but of little help to the students in it. In either event he is a failure. Such a man generally overshoots his audience or trains them into emulating him and his methods, until the student graduates a fine laboratory-man, but unfitted to do the world's work or see anything beyond the patient's excreta. The student in laboratory-work is constantly stimulating his dexterity, and exalting routine above mentality. Too much of it is narcotic in action. The right dose should be a stimulant to observation and thought. Just now it seems as if the pendulum had swung ridiculously far to the laboratory. Just now, also, there is a spasm of reform in medical teaching because of a growing feeling that we are not turning out men able to cope with the fads of half educated ignorance, the faith-curists, the unchristian and unscientific heresies so popular. If we fail in contact with these, the solution does not lie in increasing our already too great tendency to the recluse, or monastic type of education but in broadening out and getting into closer contact with the world and its needs, its heart-throbs, its sins, its joys and its alleviable misery.

This old world is a queer mixture of good and bad,—in body, mind and spirit,—throbbing for surcease. Only those in sympathy with it can treat it rightly,

"only those who sail the sea understand its mystery," and yet it is a good world, full of kindness, love and heavenly gleams of charity and it is constantly growing better—not worse.

The modern physician is an urban dweller. Few graduates plan to go back and live in a small community all their lives. The least they will do is to locate in a county seat. City life and larger population have lead to specialization. This is good, when it comes to a man of mature years, after considerable practice, naturally, and because of peculiar fitness for the work. But to see a callow youth, just out of school, drop from sight for a few months, return and at once announce himself as a surgeon or other specialist, is a sight for tears and pity. It is deplorable because it brings the genuine specialist, nay all medicine, into disrepute and belittles our high calling. Operate on me if you must, pass speculi and probangs, snare, cauterize or cut, but let it at least be done by a man who is able, by years of experience, to take in the whole situation at once and not one who can see nothing but some single orifice, and when he is done passes me on, for further examination.

There is a fault resulting from hospital work, that we see the disease and not the patient. Dealing with strangers all the time, creates a lessening sympathy with the individual. He becomes but another "case," valued only, and in proportion to, the rarity of his ailment and then treated in a routine and entirely impersonal manner. The public knows this instinctively. The many faddist schools of medicine, the foolish negation of any and all treatment, the hostility to physicians, the contemptuous criticism of them by the press, the jokes, sneers and the unwillingness to listen to or heed their efforts to help humanity, springs, I think, from a resentment of this impersonal attitude on our part. It is not formulated, but is none the less present. The modern physician has lost his love for his people and they cannot be expected to retain their love and respect for him.

With this lost respect, has departed the doctor's influence in the community. True, he is no longer one of the two or three educated men in the locality, and it is well that this is so. Still the varying schools of medicine, the changing treatment, the rapid advances and the public and free discussion of these, in the popular periodicals, leads to two results. Either seeing the differences among physicians, and having the audacity of ignorance that thinks itself wise, the laity doubt there being any permanent basis for the healing art and show a disposition to weigh for themselves every statement made to them by their doctor, or else they actually come to the conclusion that they are as well able to understand and prescribe as the man who has undergone years of special training for the business. These smattering journal-articles are a positive danger, while their number but emphasizes the public interest in the subject and the wide-spread need and dependence of the world upon the profession. They admit the need of physicians, but are unwilling to trust any one. As a result of this they wander from one to another aimlessly, swayed by every wind of doctrine, loudly condemning the men they left too soon for results to show, and at last, if kindly Nature, unassisted, works a cure, may later be loudly proclaiming in some experience-meeting how they were given up by all doctors as incurable and were cured by prayer, or some exorcizing formula beginning "God is good; good is God," Good God, etc.

Very remarkable has been the growth of the hospital idea in this country. Equally significant is the growing class distinction of them. Here in San Francisco the average hospital is beyond the income of the average man. If he strains a point and avails himself of it there is nothing left with which to pay his doctor. More and more are the poorer classes falling back on the City and County Hospital, thereby becoming stamped as indigents. There is a crying need for a hospital so managed in this city as to furnish decent attention at about half the present scale of prices. It would have the patronage of ninety percent of the population.

Again, no longer can the physician succeed who continuously gives large and bitter doses. The public palate has become very æsthetic and hence has sprung the great growth of pharmacy as a profession. This is natural and right; but let the physician limit himself to prescribing and the pharmacist confine himself to their proper preparation. There should be a most cordial relationship between the two. To the disgrace of both there are cases of rebating all the time. The sad feature of this is that it is not limited to the outcast physician but has in the ranks of these two-bit thieves many men who are members of the county medical society and who make themselves constantly conspicuous by howling for purer ethics and higher standards.

It is a hard life that you young men are entering upon. You will get precious little help from the older practitioners, some will even be actively hostile. The world at large thinks it knows a great deal and will be slow to receive you. A wave of disbelief is characteristic of the times. There is unrest and dissatisfaction politically, socially, religiously and medically. Few persons are uninfluenced by this and it shades from interference to hostility. New parties are formed, new religions started all as a protest against the old. At present the fad numerically largest are the followers of a neurotic old lady of more than doubtful moral character and reputation. Now anything that attracts so many, at least, semi-intelligent people, must have, in some form somewhere, a modicum of truth. It little behooves us to entirely condemn it until we have analyzed it. I believe it contains a world-old truth in a new form. It is religiously disguised because the churches have not taught the peace of mind that comes from a trust in God's providence as of old and many of these backsliders never were the "children of light." It is scientifically disguised as a reaction and rebuke to us, for our sins of omission. The world has asked us for bread and been given a stone. They came to us for comfort and advice, mental as well as physical, and we treated them as "cases" only, forgetting the mental suffering and the natural craving for personal sympathy. We have become materialists whereas we should be spiritists.

Years are bringing to me the belief that the unseen, the immaterial, the spiritual, if you will, the things that cannot be subjected to the proof of the senses are after all the only realities and the only things eternal. Treasure in heaven only is safe. Remember this fact, you who have listened so attentively to me these pleasant years. Be true to your higher duty and spare not yourself to help the world to better living and better ideals. Then you will at least be trusted and your councils followed.

A reliance on others, is another failure of the modern man. I welcome every

advance of knowledge but when a diagnostic method is discovered that requires special and expensive machinery, or is beyond the skill of the average man, it never appeals to me. One little hint, that we can all use, in backwoods' cabins and in the world's by-paths, is worth more than the surest test that depends upon the laboratory. Remember this, you who advocate the ultra-scientific school of medicine, that the time of your experts would be better spent in simplifying, making practicable and popularizing much of what we already know. Medicine cannot be advanced by a few brilliant minds, but by the surge forward of the profession as a whole. The history of medicine is full of revolutionizing discoveries, of brilliant generalizations published too soon and then forgotten for a generation or two, because the rank and file were not equal to their appreciation. Be not dependent upon the laboratory. We do not need any more or better-equipped school of original research work, two or three would supply the whole United States, but we do need schools that will train men for a life time of good work. We must not lose sight of the fact that the ninety-nine percent who graduate, must go into the small places and will not even remain in the cities, and it is our business to fit such men for their life work, not to train them for original work.

And so in contrast with the past it seems to me that the modern physician is characterized by a loss of self-dependence and resourcefulness, by a dependence upon the findings of others to line him in aright, by diagnostic methods too complicated for him to do, even had he the skill to read them, and more seriously by a lack of sympathy for, and understanding of anything, but the actual derangement that he diagnoses. I say this with modesty for I may be wrong; I am not so sure of many things as I was twenty years ago.

And lastly, what is to be the physician of the future, and what do I hope to see you become.

I would like to see the young man started under the supervision of a physician, and, because of his fitness for the life, and remain under the advice of the preceptor for years. His pre-medical course should be ample in sciences and such as to cultivate his powers of observation, whether it embrace a college course or high-school-fitness in subjects only being considered. In all spare time let him be with the older man. Let him take three strenuous years in a medical college whose teachers are men actually engaged in practice and finish with a year of interneship, not merely as a superior head nurse, but with actual responsibilities. Then let the young man return to his own home and, if possible, close association with the preceptor, learning from his experience and imparting in turn the newer methods he has learned, and thus will both be improved.

Let the young man begin amid his own boyhood associates and in the country, where only he can get the broadest vision of his profession. He will start with the good will and love of many. We Americans move about too much. We miss the start and weight that comes from being a member of a family in good repute for generations. We need also to scatter out our bright young men, not to teach them to starve in a city, there to lose their enthusiasm and degenerate into shady practices because of the need of bread and butter, which is the lot of the majority who crowd the cities. To struggle into practice in San Francisco is a sordid lot. When I hear of some gifted young man ruined, because he

listened to temptation and is arrested for criminal practices, I remember my early struggles and the times when a dollar meant so much, as I worked away, without books, equipment, or even without knowing where the next suit of clothes or month's rent was to come from, and I have a sense of personal grief and pity for I know what he went through before his better nature yielded.

Enter into the vital life of your home. Be a *friend* and *neighbor* to your people and plan to live contentedly and die there. Gain the personal touch, and you will have the influence, and let this influence be always for the best.

The true physician must be a gentleman, to which are added all the Christian graces and the poise of culture. Only by real manhood and merit can you take your proper place in the world. Believe in the ultimate triumph of truth and in the coming of that time when the "righteousness of God shall cover the earth as the waters cover the sea." The world needs men of such ideals and will always reward them.

The teaching of our schools must become more personal and clinical. The patient behind the disease, must be pointed out by the instructor. Would that we teachers could have, just once, a student so well posted that we could ignore the symptoms and go deeper into the man behind.

Small, well-equipped and cheap hospitals should be available everywhere. From the richest to the poorest, the comfort should be the same. This may be done perhaps by combining the charitable and the paid institutions. Therapy will be a logical and definite aim. The details will be left more and more to the trained pharmacist and we will mutually help each other.

Specialists in the future will be men who have had a general practice but who, because of peculiar fitness are finding special work drifting to them and who have added to this, courses of special study for—not months—but years. For such men some competent source should give a special degree. The right to handle any case should always remain in the state license, but the public will appreciate an added degree, if honestly given.

Ignorance, poverty and crime will always exist, yet the future will bring a better appreciation of us as medical men but only when, and exactly to the extent, that we are true to our ideals. Let us waste no time in fighting false beliefs but in self-improvement. The clamor against lodge practice is a good deal of a joke and an evil only because men can be had who will take a whole family at a dollar a month. Often the very men who are crying most lustily for reform and who are "thanking God" like the Pharisee that "they are not like other men," are surgeons for some railroad or large corporation or hospital association—only larger lodges under other names. If one of these prominent men is going to do this work for one-tenth of what he would ordinarily collect, let him not blame a recent graduate if he takes a lodge for a mere pittance. If it be true as the author of David Harum makes that character say "a certain number of fleas is good for a dog because it keeps him from worrying because he is a dog"—then it will at least keep the young man from worrying because he has nothing to do. He will be busy scratching most of the time.

No other calling gives away so much or so cheerfully. No other calling by its effort is destroying its own source of livelihood. God grant that it may always

be so. If ever we put the love of the dollar above the call of distress let us cry with the daughter of Eli, "Ichabod, our glory is departed." Beyond its business side medicine has something immensurably greater.

Some day the world will wake up and, with the extra bounty born of regret at the delay, shower appreciation upon the martyrs we have ever been able to furnish in the hours of need. Men who allow themselves to be inoculated with deadly germs, who died to prove or disprove a theory whereby other lives by thousands can be saved to usefulness and happiness, deserve memorials of stone even more than the heroic souls who flushed with excitement and by the inspiration of numbers gave up their lives on fields like Gettysburg. I am proud of my profession. When fire and earthquake destroyed this city the State Medical Society was in session. Did those men go home to allay the natural fears of their families—mind you no word could be sent out and the apprehension was exaggerated. Not a man of them but stayed. They manned our hospitals, assisted our local surgeons, did yeoman work for days on our distributing bureaus, and visited the homeless in our parks until they saw we were able to handle affairs alone.

We have our faults, but the spirit of the profession needs but some emergency to see its members rise grandly to the occasion. More than any other profession or class they had the ability to handle that emergency. Trained to coolness in danger, calm of judgment amid excitement, familiar with distress, to discerning of motives, and knowing human nature, in no other walk of life could their equals be found and while others were criticized for poor judgment and extravagance, even peculation, tell me if you can a physician of repute who obtained a tainted dollar or did not give better than the average service. We were represented on every board and every committee and did a disproportional part of all the work.

The physician of the future will know that he knows. He will be self-reliant because he will be properly trained. He will be competent to diagnose with the best, he will do his own laboratory work and know how to read its findings aright in the light of the clinical picture.

Lastly, he will be a man of sympathy and appreciation of others. To each he will give his very best. Behind the symptoms he will see the terror-stricken soul. By council and example he will put him in a mental state for the healing forces of Nature to work unhindered. He will be a trusted friend in whose fidelity the sick one can with the utmost confidence rely. And when he cannot hold out the hope of cure he can relieve the pain, impart a confidence in the providence of God and a philosophy of life that will teach the dying man "to wrap the drapery of his couch about him and lie down to pleasant dreams."

And now, my new brethren in this profession, let me congratulate you on having reached so noble a position. This is, however, but the beginning of the real study of medicine. We have only taught you to a point where we feel that you can pursue your journey alone.

It is a life of hardship and poorly paid service. It has many inevitable disappointments but it also has many precious rewards. The love and affection of the family, the confidence in you that will lead the wife to confide to you secrets hidden from her husband, the faces of the sick brightening at your call—all this

you will know and in this you will find your chiefest reward. Like the great Physician you will be a man of sorrow and acquainted with grief. The depressing sights and sounds of suffering are not to be met by a case-hardening, but by a philosophy of life that is supreme optimism and which sees the beauty and the good in unexpected places. I would have you confident, self-reliant, and above all, sympathetic. With Polonius I say to you, "This above all—to thine ownself be true; and it must follow, as the night the day, thou can'st not then be false to any man." Much is expected of you—meet it, by being it, in reality.

Material wealth can hardly be expected to come to any of you, but riches of character will, if you have followed what I have ever taught. You may none of you reach fame or distinction, that is oftener a matter of chance than of forethought, it will make you no happier and may lessen your usefulness. Cultivate character, give freely, hold fast to your ideals, extend your help to the poor and after many years may you hear the words "well done, thou good and faithful servant."

These have been pleasant years that we have spent together. It is a rare and sacred privilege to mould the thoughts of any one. All my teaching has been done under the sense of this responsibility. Some day I shall pass on before you, for I am older than you. Then when you occasionally meet together speak kindly of me, and give others in turn a chance to do the same of you and so let a widening stream of kindnesses go down the years until we meet in that city of God whose strongest appeal to me is that "there shall be no death, neither sorrow nor crying, neither shall there be any more pain, for the former things"—and with this the need of our life work,—"have passed away."

PENNSYLVANIA IN THE AMERICAN PHARMACEUTICAL ASSOCIATION.*

FRANKLIN M. APPLE, PHAR. D.

Pennsylvania Pharmacists and their families should be interested in the American Pharmaceutical Association for a great variety of reasons—sentimental as well as practical.

I will first direct your attention to the sentimental side of the query.

Are you aware of the fact that Pennsylvania played a most important role in the organization of the American Pharmaceutical Association?

Pennsylvania was the state in which it was organized in 1852, hence we can, with pardonable pride, point to it as, largely, a product of our beloved "Keystone State."

Of the list of sixty-one Presidents, Pennsylvania has supplied eleven of those chosen to the leadership: Prof. Daniel B. Smith in 1852, Chas. Ellis in 1857, Prof. Wm. Proctor, Jr., in 1862, Prof. Edw. Parrish in 1868, Chas. Bullock in 1876, Jas, T. Shinn in 1880, Chas. A. Heinitsh in 1882, A. B. Taylor in 1890,

*Read at the annual meeting of the Pennsylvania Pharmaceutical Association, held at Buena Vista Hotel, Buena Vista, Pa., June 23-25, 1914.

Prof. Jos. P. Remington in 1892, John T. Patton in 1900 and Jos. L. Lemberger in 1905.

As First Vice-President six pharmacists from our state have been honored by election to that office; as Second Vice-President two have served the Association, and as Third Vice-President three have been chosen.

For the important office of Treasurer, Mr. A. B. Taylor was selected to serve from 1852 to 1854.

The records show that, in the position of Corresponding Secretary, Pennsylvanians served almost continuously from 1852 to 1863.

As Recording Secretary, from 1853 to 1854, 1859 to 1862, and 1863 to 1865, pharmacists hailing from this state occupied the office.

When the offices of Corresponding Secretary and Recording Secretary were consolidated into the office of Permanent Secretary, our beloved Prof. John M. Maisch assumed the duties of the office and rendered efficient services until 1893, when Prof. J. P. Remington ("our Josie") took up the labors of his fellow professor for the ensuing year of the Association.

The very important and exacting office of Reporter on the progress of Pharmacy, was satisfactorily filled by Prof. H. Kraemer from 1892 to 1895.

As Chairman of the Council, the governing body of the Association between the times of meeting of the Association, Pennsylvania supplied Prof. Jos. P. Remington from 1880 to 1886 and from 1908 to 1909.

As Chairmen of the several Sections of the Association, the following have officiated as presiding officers: Prof. E. F. Cook, of the Section on Pharmacopœias and Formularies, organized in 1913; Mr. Jos. L. Lemberger, of the Historical Section, organized 1904; Mr. F. M. Apple, Prof. Louis Saalbach, and Mr. P. Henry Utech, of the Section on Practical Pharmacy and Dispensing, organized 1900; Prof. C. B. Lowe (2 terms), Mr. Jos. W. England (2 terms), Prof. Chas. H. LaWall and Mr. John C. Wallace of the Section on Education and Legislation, organized 1889; Prof. F. G. Ryan, Mr. Lyman Kebler, Mr. M. I. Wilbert and Prof. Chas. E. Vanderkleed of the Section on Scientific Papers, organized 1887, and the Section on Commercial Interests was under the guidance of the writer, in 1911. This Section was organized in 1887.

It will be observed that the first President, first Treasurer, first Corresponding Secretary and the second Recording Secretary were recruited from the pharmacists residing in Pennsylvania, and that we have always supplied a large number of active workers to assist in guiding the destinies of the Association—amongst whom we are very highly pleased to note the name of "The Father of American Pharmacy," Prof. Wm. Procter, Jr. To the untiring efforts, deep thought and helpful suggestions of our Jos. W. England, to a large degree, can be attributed the inception of one of the greatest assets of the Association—"The Journal of the American Pharmaceutical Association."

With such a record of valiant service rendered by the pharmacists and chemists claiming this state as their home at the time of their term of office, should it not appeal to the pride of every Pennsylvania pharmacist eligible for membership in the American Pharmaceutical Association, and arouse in them a strong desire to be numbered among the members of such an organization?

Laying aside the sentimental side of the question, we will now approach it from the practical side, and inspect the claims of the Association upon those eligible for membership.

It will be observed that the first Section organized by the Association was that of Commercial Interests, indicating that commercial problems and customs were not ignored or tabooed by the fore-fathers. In fact the original Constitution and By-laws of the Association demonstrate that unsatisfactory commercial condition was one of the prime causes leading to its organization. A careful study of its archives, proves that the materialistic side of pharmacy was never lost sight of, and continued efforts were made to remedy commercial customs that were the cause for complaint by many of the pharmacists of the past six decades of years.

It has been truly said to be a scientific and professional association, as a perusal of the minutes of its Scientific Section will prove; but it did not neglect or frown upon commercial questions as it has been repeatedly but unjustly, accused of doing. When a proposed remedy for an evil custom,—one that it was thought would stand the test of the courts,—was presented for consideration, it received careful attention by the *entire* membership in its annual sessions, not excluding those members supposed to be interested solely in scientific investigations.

The continued existence of pharmacy, as a learned profession, is due to the Association's fostering influence, more than to any other known agency; hence your ability to practice pharmacy, as a distinct and respected vocation, must be credited to this organization.

Since the organization of the Section on Practical Pharmacy and Dispensing a wonderfully rich reservoir of knowledge has been tapped, from which inestimable benefits have flowed to all practical pharmacists; in the majority of cases its beneficiaries being ignorant of the source of the helpful influences.

Legislation has received its due attention, and many of the legal rights and privileges you enjoy, emanated from the deliberations of its members.

For years, it has been customary for the wives and families of some of the members, to accompany their husbands and fathers to the annual gatherings, thereby making priceless acquaintances and friendships. A few years ago, it was decided to establish a Women's Section, to be officered and managed completely by the ladies, thereby affording them an opportunity to satisfy their desires to advance the interests of their sisters, who have taken up pharmacy as a life work, and to render whatsoever assistance lay in their power in aid of the general interest of the profession and business of pharmacy; hence it should be perfectly clear to all that provision has been made for the members of both sexes to labor together for the benefit of pharmacy, and of pharmacists and their families.

Under such conditions does it not appeal to you, ladies, that you should urge your husbands, brothers and fathers to become enrolled as active members thereof, and thereby, automatically, to make yourselves eligible to join in the activities of the Association?

If one is *truly* interested in an association or effort, he or she will become active in its behalf and be a missionary for it.

Do you not feel that *you* should become *truly* interested in the American Pharmaceutical Association, and experience the joys and benefits of membership therein?

We extend to you an earnest appeal to join our ranks and assure you we will accord you a warm welcome when we can grasp your hands as fellow members.

"Never put off until tomorrow what should be done to-day"; hence decide to accept the invitation and join us in our efforts to uplift American Pharmacy.

ORGANO-THERAPY FOR PHARMACISTS.*

BY JOHN ZIEG, M. D.

I will discuss only those biological products which are derived from the adrenal, thyroid, thymus, pituitary and ovarian glands, as these are the most important and most used, and their therapeutic value is quite well established. Frankly, reliable information, of practical value to the dispensing pharmacist, is obtainable only from those who prepare these products. To those who become interested, I would suggest that they obtain the printed literature and read the details.

Let me impress upon you,—

(1) That these remedies as a class have already won a place among reliable therapeutic agents.

(2) Their physiological action is to a great extent known even now, i. e., that action which can be recognized clinically, after the administration of sufficient dose, for a long enough period—this in distinction to their action in the normal body, where the activity of these glands is strongly interrelated, to preserve an equilibrium of paramount importance in the preservation of health.

(3) Very remarkable results have been consistently obtained in the regular clinical use of these agents and that, too, in conditions resistant to other treatment. For example, of adrenalin—its powerful local astringent and hemostatic action—its rapid powerful internal action as a cardiac stimulant, and its equally decisive and reliable action of relieving the paroxysms of asthma.

Then again, of pituitrin, its remarkable action on non-striped muscular tissue, which makes it a marvelous aid in overcoming uterine inertia in labor, a heart-tonic of merit and a remedy of worth in many conditions of muscular atonicity. Then, in the use of thyroid extract or thyroprotein, we find wonderful results, in conditions due to deficient function of the thyroid gland. I might mention more, but these should suffice to arouse the interest of the pharmacist and stimulate in him a desire to learn more of the details of their manufacture and use.

Lastly, these remedies should be used only under the direction of a qualified physician.

Preparation:—In manipulating material so unstable as glandular tissue from the animal body, with a view to preserve it and the active substance it contains, great care and skill must be exercised. A thorough knowledge of the structure both gross and microscopical, together with all the information available on the phy-

*Read before the San Francisco Branch, June 9, 1914.

siology of the gland, must be taken into consideration. In the case of the above mentioned glands, the original preparation consisted of the dried substance of the fresh gland, which was previously freed of all extraneous tissue—then ground and put into capsules. At this time considerable advance has been made over the process of simple desiccation of the recent gland.

Care in obtaining fresh material:—This includes the inspection of the animal for diseased condition—no material being taken from animals not otherwise fitted for consumption for food—further the glandular tissue, itself, is inspected for abnormal conditions, since it is quite possible to obtain glands that are far from normal from an animal presenting no condition requiring its condemnation for general food purposes.

Care of fresh material before preparation:—It is needless to say no time is lost in getting the preparation under way, but in the short interval which elapses, from the time the gland is removed from the animal, until the process of preparing it is begun, adequate refrigeration and protection from contamination and infection is provided.

Manipulation of the fresh material:—This includes the thorough removal of extraneous tissue, like fat and connective tissue and the separation of such portions of the gland-tissue proper, which is known to have no value in the preparation of the particular product in hand, i. e., in the case of pituitrin, only the posterior lobe is used, and it must be very carefully separated from the anterior lobe.

Scarcity of fresh material:—From the foregoing it is evident that unlimited supplies are not available, indeed the supply rarely equals the demand, as in the case of pituitrin and corpora lutea,—in the preparation of which only a small part of the whole gland is used,—the problem of obtaining sufficient supplies becomes, at times difficult.

A careful consideration of the foregoing points will give some idea of the care, skill and equipment entering into the production of these therapeutic agents, and the cost attending the same.

LISTED PREPARATIONS.

Thyroid gland:—Desiccated gland—U. S. P., physiologically tested, assayed to contain not less than 0.2 percent iodine, in capsules or tablets, for internal administration.

Thyroprotein (Beebe)—concentrated extract, containing active principle, physiologically tested, assayed to contain not less than 0.33 percent iodine, in tablets containing 1/50, 1/25, 1/10 gr., for internal administration, in glaseptic ampoules containing 1/50 grain, for hypodermic use.

Adrenal gland:—Desiccated gland—U. S. P., physiologically tested, in capsules or tablets. Adrenalin, the active principle—in powder form or in hypodermic tablets, in solution, in vials or 1 cc. ampoules.

Thymus gland:—Desiccated gland—in capsule or tablets for internal administration.

Pituitary gland:—Pituitrin—active principle, in solution, standardized physiologically on the basis of its blood pressure-raising property, in 1 cc. ampoules for hypodermic use.

Ovarian gland:—Corpora Lutea, desiccated—the dried substance of the yellow glandular material, only—the remainder of the gland being discarded.

Because adrenalin is the oldest, has well established worth, and is much used and frequently dispensed, I shall present some of the most important points in relation to it. There is a good deal of sophistry about deterioration of products like adrenalin. It should be generally understood, that it is absolutely impossible to prevent the ultimate deterioration which takes place in adrenalin and other suprarenal products. The change in a product like adrenalin is indicated by a pink color which grows increasingly more intense as deterioration develops. In the early stages, no appreciable loss of strength results, and it is not until the product actually turns brown, and begins to precipitate, that it loses much of its efficiency. Now this change of color, can be prevented by the use of a bleaching-agent like sodium sulphite, but the deterioration goes on just the same—the loss of strength is not prevented—it is simply concealed. The pharmacist who keeps his stock bottle (the opened-one especially) away from heat and alkaline reagents, and in such a way that dust, cotton or organic matter cannot gain access, will have a minimum of deterioration and will be able to dispense this product with entire satisfaction to his trade and himself.

Adrenalin in the presence of alkalies, even in high dilution, undergoes rapid deterioration, and when so prescribed by a physician, it is eminently proper that he be told of this change. A much disseminated error is, that adrenalin cannot be sterilized by heat. This became current about the time synthetic suprarenin was issued. The following tests bring out the facts regarding this point:

1. Ten cc. of 1:1000 solution, in a test tube closed with absorbent cotton, were imersed in boiling water for 15 minutes. At the end of this time the loss by exaporation was compensated, by the addition of distilled water,—careful testing showing the solution to be full 100 percent. The remaining solution was again immersed in the boiling water for a second period of 15 minutes, and the loss again corrected,—careful testing showed the product to be still 100 percent. This was repeated a third time and the adrenalin again gave a full 100 percent strength.

2. Twenty-five cc. of the adrenalin solution in a tightly-stoppered vial were immersed in boiling water for 15 minutes. This was repeated twice, and after each period of 15 minutes careful tests of strength were made. After the three heatings the adrenalin tested full 100 percent.

3. A very severe test—20 cc. in a small open-mouthed flask were boiled for five minutes. At the end of this time about 60 percent of the original solution had been evaporated but the volume was restored by the addition of distilled water and the solution then tested. This was repeated twice and tested after each addition. After the second boiling the adrenalin tested 100 percent and 90 percent after the third. This third test is a very severe one and is one which no careful pharmacist would resort to in the sterilization of his products, as such treatment would decompose ordinary alkaloidal solutions, such as morphine sulphate or atropine salts.

It will be seen from the above, that sterilization by the first two methods, are

quite practical, for periods from 15 to 30 minutes, or even longer, without impairing the activity of adrenalin, and that the pharmacist is able to dispense freshly sterilized solutions of this agent, when called upon to do so. One point in this connection should be noted,—it is advisable to sterilize only the quantity needed for immediate use.

THE GENERAL USE OF NEW SYNTHETICS.*

FRANKLIN M. APPLE, PHAR. D.

A careful search for the causes that lead to self medication by the laity with the newer synthetic remedies reveals the fact that a number of agencies are responsible for the practice.

The prime offenders in this respect are the manufacturers of the products termed patent chemicals, who ingeniously invent and apply to their goods easily pronounced names, which are not difficult for the consumers of their products to remember.

Ostensibly these euphonious names are adopted for the benefit of the medical practitioners, but their true object is to catch the eye and ear of the patient, who may soon dispense with the services of his physician, when he imagines he needs the chemical previously prescribed by his medical adviser; for it is not very difficult for a party of average intelligence to read a prescription for such a medicament, if it is clearly written by the prescriber.

If the physician announces his diagnosis of the case to his patient when handing him a prescription legibly written for one of these synthetic products, it is quite probable that the patient will associate the disease and the remedy together, with the result that he decides at a later date, when suffering with similar symptoms, that he need not consult his medical adviser, and he proceeds to medicate himself without the necessity of paying a fee for advice to take the formerly used chemical.

What has been stated concerning the possibilities of the patient associating the diagnosis with the remedy becomes an assured fact when the medical men prescribe verbally for the patient—whether it be by telephone or otherwise,—adding thereto explicit directions for the patient's benefit, in order to avoid writing a prescription, which is a very suicidal policy, indeed, for physicians to follow.

Experience has proven that the cause for some of this practice can be traced to the doors of the trained nurse, who, through a sense of friendly interest or vanity, usurps the role of the physician, and, in some instances, goes much farther in her support of the remedy by extolling its merits most heartily.

Those of our calling are, at times, found to be guilty of the same practices that some trained nurses follow—undoubtedly actuated by the same motives—with the result that the patients are unconsciously taught self-medication.

The patient becoming possessed of a (to him) wonderful new remedy proceeds

*Read at the annual meeting of the Pennsylvania Pharmaceutical Association, held at Buena Vista Hotel, Buena Vista, Pa., June 23-25, 1914.

to take a friendly interest in his fellowmen, who appear to be afflicted with a malady similar to his previous ailment, with the result that he is a free medical adviser and a good press agent for the manufacturer.

To sum up the entire situation I would state that the causes for the use of the newer synthetic remedies by the laity is a studied effort upon the part of the manufacturers thereof to encourage self-medication by the public for their financial gain; and *careless practices* by some nurses, physicians and pharmacists, which lead to the same end—self-medication by the public.

ALCOHOL AS A FOOD.

The influence of alcohol upon metabolism, as the chemical changes that occur in living matter are called, having now passed from the field of speculation and controversy into the realm of ascertained fact, there is no longer any justification in denying to alcohol the right to be regarded as a food. The chief property upon which this claim is based is that of partially paralyzing the living cell, thereby inhibiting the breaking down of the particles of fat or carbohydrate with which it is surrounded. The living cell normally preys upon these and proteid particles, and by breaking them down is enabled to make good the wastage of tissue resulting from its own combustion.

Alcohol is in this respect a "fat-saver," though it is itself consumed in the process, yielding heat and energy to the body.

Apart from their alcoholic contents, however, many spirits possess great value at certain times by reason of their stimulating effect upon the heart, brain and other vital centres. Preeminent in this respect is the finest old liquor brandy, which owes its peculiar properties to the presence of small quantities of highly complex volatile ethers formed from the acids and alcohols present during the period of maturing.

Owing to its property of dissolving many organic substances, alcohol is of great value as an aid to digestion, and as a stimulant and restorer of circulation it occupies an unrivaled position. Nevertheless the use of alcohol must be regulated with a nice discrimination, for its effects are not always what they seem. It is unwise, for instance, to take alcohol before going out into the cold, for by so doing the blood will be driven into the surface blood vessels and capillaries, and through their subsequent dilation an excessive amount of heat will be radiated from the body just when it is most required. It is right and proper, however, to take alcohol on returning from the cold, for it will then promote the circulation throughout the body of all the blood which contact with the outer cold has driven from the surface and the extremities away into the internal viscera.

It is well to bear in mind that alcohol does not keep one warm. On the contrary, it lets out one's heat.—*London Times.*

American Pharmaceutical Association

Organized 1851. Incorporated 1888.

GEORGE M. BERINGER, PRESIDENT 501 FEDERAL STREET, CAMDEN, N. J.

Dear Fellow Member:

The time is rapidly approaching for the Sixty-second Annual Meeting of the American Pharmaceutical Association. Detroit is famous as a convention city; renowned alike for its beauty and the hospitality of its citizens. The advance news is that the local committee have prepared to make our stay full of enjoyment and that the various Sections have arranged programs replete with matters of interest and profit.

We believe that this meeting, August 24th to 29th, will be a notable event in our history and will be the largest gathering of representative pharmacists ever held in this country.

The officers extend an invitation to you to come and enjoy to the fullest extent the pleasures in store. May we have your presence and co-operation? If you have never attended a meeting of the Association, attend this year and get imbued with the prevailing spirit and enthusiasm. If you have been attending, you will understand what an influence and benefit to each member is a meeting of the Association that stands for the welfare of all concerned in pharmacy. Goethe has well said: "There is no teaching to compare with what we derive from intercourse with others."

To the former presidents, I extend a special invitation. It is the hope to have present at the opening session all of the living former presidents.

Come and, if possible, bring along a new member to help the good work of the Membership Committee. There is going to be much of interest and ties of friendship and good fellowship will be renewed and strengthened.

This invitation, of course, includes the wives and daughters and lady members of the Association, as without the presence of the fair sex there could be no full enjoyment of the occasion.

The American Pharmaceutical Association is the exponent of all that tends to the welfare of pharmacy. Its aim is true, ethical and progressive pharmacy. Its activities are extending along ever increasing avenues of usefulness. The president will welcome suggestions from any member for improvement in methods or for additional lines of activity beneficial to pharmacists.

Looking forward to the pleasure of greeting you at Detroit on August 24th, I am

Yours fraternally,

GEORGE M. BERINGER, President.

CAMDEN, N. J., July 10, 1914.

Editorial

JAMES H. BEAL, Editor.....Scio, Ohio
ERNEST C. MARSHALL, Acting Editor.....63 Clinton Building, Columbus, Ohio

TIME TO HALT.

WE would especially call the attention of every member of the A. Ph. A., and, thru them, that of every member of the profession, to the wise, brave and strong words of Dr. Beal which are contained in this issue under the caption, "Legislative Problems in Pharmacy."

Every sentence of this article should be studied by the druggists of this country, particularly by those who are engaged in endeavoring to shape the legislation of the nation and its several states.

The country seems almost to have gone apothecary-law-mad in its efforts to restrain imagined evils,—or if not imagined evils, at least grossly exaggerated ones, and, as Dr. Beal so well says, the drug-trade seems to have been a target for restrictive legislation, as if they, and they alone, were the only evil-doers; the panderers to all the morbid and depraved appetites of the country.

The fear, that even simple remonstrance to the most vicious legislation of this character may cause the objectors to unwise and burdensome laws to be classed as wrong-doers, has often prevented druggists from objecting to such laws, and, in consequence, restriction upon restriction has been piled, like Pelion on Ossa, upon the already over-burdened backs of the members of our profession.

Such pusillanimity has encouraged these persistent pests who are engaged in the attempt of reforming the world according to their light, and deceived by the apparent plea of "Guilty" by the druggists and their lack of resentment, their not "fighting-back"; their "appetite grows with feeding" and they seek to restrict more and more our sales, until, unless they are checked, they will require a prescription to be shown for even sales of postage-stamps or the use of the telephone. And it is not alone these men who are silly in their ideas. Some of our own are as bad. Why should a person be required to have a prescription to buy seven and a half grains of corrosive sublimate of a druggist, when they can buy a pound without such prescription of any general dealer in chemicals or even of the village grocery-store?

Not only are these restrictions burdensome to the practice of pharmacy, but they oppose its respectable exercise. It is not alone the "yellow" journals which hold the drug-trade up to odium, but respectable journals lend their columns to disseminate the same reprehensible views. Recently one of these, with the largest circulation in the country, published an article entitled, "How Kansas Boarded the Water-wagon," which contained such slurring references as the "tipple of

drug-stores," the "drug-store joint," "liquor sold behind imitation prescription-cases," etc., etc.

Far beyond the exaggerated statements of the article in representing that no liquor is now sold in Kansas, in its importance to our profession is the demagogic representation that the drug-stores of Kansas were the persistent violators of the laws. Such insinuations are mean and despicable. As well might we hold up all writers for the press as drunkards because there are a few conspicuous examples in that class.

There are Police Gazettes in Journalism, but we should be unfair and unjust to class the Saturday Evening Post as one of that class of periodicals, and it is also unfair and unjust for that journal to allow its columns to disseminate the idea that the practice of the Profession of Pharmacy is connected with pandering to vice and the demoralization of the community.

It is time that we showed resentment against these injurious and false misrepresentations, especially when further quiet submission to them is but encouragement to more animadversion and the imposition of more vexatious burdens and also when a patient sufferance is interpreted as conscious guilt.

<□>

CONVENTION DISPATCH OF BUSINESS.

THE most annoying and delaying interference with the prompt and agreeable dispatch of business at our Annual Meeting, is said by many people who have observed matters carefully at previous conventions, to be the seeming utter disregard of the Chairmen of the Sections, to the time-schedule, arranged with care by the Local Committee, from which there results confusion, delay, and chaos in the dispatch of the program. For no matter how well-conceived and arranged such a program may be, or how zealously the Local Secretary and his Committee may have been in the planning of details, and in their work for the proper conduct of the Convention, these conditions must appear, without strict attention to the schedules arranged for the conduct of the meetings.

Think for a moment of the confusion that would take place in a railroad system if the conductors of trains paid no attention to the time-tables, and each man took his train from the station at any time he pleased, or when his passengers thought proper, and the conception of the results which would ensue from that course of action, will give one an idea of the result of a disregard of their time-schedules by the conductors, or Chairmen of Sections.

It has been often observed that members have come to Section Meetings at the times appointed for them, and observing no signs of any meeting, have gone away and not returned, either thinking the meeting postponed, or that it was being held elsewhere, and that enough of these members have so gone away as would have made an audience worthy of the Section.

At the Los Angeles meeting, the Chairman of the Section of Practical Pharmacy and Dispensing, announced that his meeting would begin promptly at the time appointed, if not a member was present, with the result that the meeting was begun on schedule time with a large attendance, and was one of the most successful sessions held at the Convention.

If the rule should be adopted at the Detroit Convention, that the Chairman's gavel, falling to open the Section session, should drop at the precise minute appointed for the opening of that session, more would be done for proper dispatch of business than gallons of printers' ink used in discussing the number and name of the various sections; but without the adoption of this simple plan, no amount of work or change of method will be affective in bringing about a better result in the dispatch of business. The Local Committee requests the announcement that it earnestly requests the Chairmen of Sections to be promptly on hand to call their sessions to order at the times appointed, and announces that the first meeting to be called at the Convention, will be that of the Chairmen of Sections to consider this first and most important point of Fidelity to the Time-schedule.

<□>

SUPERSTITION IN MEDICINE.

From the most ancient times we read that more or less superstition was rife among the peoples of the earth; a belief in the possession of virtues in things unusual to possess them, and the more unusual or strange such belief, the more firm was the faith of those who attributed value to drugs or charms. Herbs should be gathered in the light or the dark of the moon, or with the repetition of cabalistic words at the time of their gathering, without which the herbs were of no remedial value. Strange things were used in pharmacy under the influence of this belief. Schenkius, Mizaldus and Rhasis commended, for the cure of mental troubles, "an old cock, a ram's head or a wolf's heart." A belief in the potency of gems to ward off or to cure disease was common; Paracelsus was a believer in the efficacy of the ruby, either powdered and taken, or worn in a ring, and Renodaeus said that, "Precious stones defend us from enchantment, cure our diseases, drive away griefs and exhilarate the mind." Encilius commends the ruby as a remedy against sorrow, and a restorer of reason. Albertus wrote in praise of a stone called "Chelidonius" which was found sometimes in the belly of the swallow, and said it was a positive cure for lunacy. Lemnius praised the carbuncle and coral as possessing mystic power "to drive away fear and devils, overcome sorrow and repress troublesome dreams." One of the approved medicines of the ancient times, was "a ram's head, that never meddled with a ewe, cut off at a blow, and the horns only take away, boil it well, skin and wool together; after it is well sod, take out the brains, and put these spices to it, cinnamon, ginger, nutmeg, mace, clove, of each a half oz. Mingle the powder of these spices with it, and heat them in a platter upon a chafing-dish of coals together, stirring them well, that they do not burn; take heed that they be not too much dried or drier than a calf's brains ready to be eaten."

Amulets were much approved by Mizaldus, Porta, Albertus, and others. The Edinburgh Pharmacopœia of 1790 has lingering traces of these strange beliefs in its inclusion of Crab's Claws and Eyes, Millepedæ and their preparation as a conserve. But after this period there does not appear much of the superstition in the pharmaceutical works of authority.

In all times there have been these beliefs in the occult and mysterious influences for good and for evil upon the destinies of man.

In Ben Jonson we read:

Subtle,—And

Beneath your threshold bury me a loadstone
To draw in the gallants that wear spurs; the rest
They'll seem to follow.

This, the advice of the alchemist to the credulous Drugger, who comes for advice in regard to the equipment of his store, gives evidence of a prevalent belief in spells and charms in determining the affairs of life in those days, and a like belief has been maintained since the earliest days of recorded history.

Horace testifies, in the Fifth Ode of Book I, that it was customary to offer a sailor's garments to the powerful God of the sea:

"Suspendisse impotenti
Vestimenta maris deo."

And it is said that the walls of the Temple of Æsculapius were covered with tablets and inscriptions erected by those who thought their sacrifices to him had cured their ills. We smile perhaps at the credulity of these ancient peoples, but not long since, at a dinner-party at which there were present some of the men most eminent in the country,—those prominent in politics, literature and in journalism,—the subject of belief in things occult being broached, there was not one present who could deny their absolute unbelief in all the superstitions which are generally thought to belong to the province of the childish or uneducated. One man, and he a distinguished commentator on Darwin and Spencer, firmly avowed that he had actually seen the personal devil and gave a harrowing description of his appearance. One said he would never be a member of a dinner-party at which he made the thirteenth person; another never would begin an enterprise on Friday, and when it was the thirteenth of the month there was "nuthin doin" for him. Thackery believed firmly in "luck" and Napoleon is said by Bourrienne to have believed in "his star."

How many of us "knock wood" when speaking favorably of our health or prospects; like to see the new moon over our right shoulder, or like the man in Hoyt's play are "not superstitious, but don't like to walk under a ladder?" How many of us put on our right shoe first; dislike to meet a funeral on our way to important business, or sneeze without ejaculating a prayer? A number of years ago, the question of launching a battleship on Friday was made the subject of discussion in the navy department of this great nation. And so it goes, and it must be feared that some of our present-day ideas are not far removed from those days of Horace and of Jonson. We are prone to look upon the other man as being weak and childish in his belief, while we at the same time may be carrying a horse-chestnut to keep away the rheumatism, or wearing a stocking wrong-side out for fear of changing our luck. As Carlyle says, "My doxy is orthodoxy, your doxy is heterodoxy."

It is of course useless to argue against these things,—as well try to argue a Christian Scientist out of his belief that there is no pain, even when an exposed nerve is causing him to groan in anguish.

"Such fools these mortals be."

Doubtless the reason, to some extent at least, for this belief in spells and

amulets and charms, is that men realize their insufficiency to cope with the vast powers of nature, and also their ignorance of what is in store for them in the Great Beyond. He is thus led to rely upon those things which his sober senses should assure him have no more power to influence his life, than the "Mumbo Jumbo" of an African tribe has over the destinies of those who bow before it in humble adoration.

Drugger hoped by the loadstone to draw in patrons, not relying upon the fact that in himself should be the magnetism to draw to him all who came within the circle of his influence. It is a misfortune for a man not to realize and to depend upon this positive fact. Let the young druggist, in the founding of his store, place for its corner-stone the desire to serve his patrons honestly and sincerely. Let him inscribe upon it the resolve to sturdily resist the sordid commercialization of his business; let him earnestly strive to maintain the high professional standards of the most honorable and best profession in the world,—one that has numbered in its ranks the truest and noblest of mankind, and to him will be gathered not only the monetary return which always follows such ambitions and such service, but that lasting reward which comes to every man who does his duty well and faithfully, the approval of his conscience and the knowledge that, in so far as lay in his power, he has advanced the profession he has chosen for his life-work.

TO EVERY MEMBER—FROM THE LOCAL COMMITTEE.

"Of course" you are coming to the A. Ph. A. Convention, which will be held in Detroit the week of August 24, 1914.

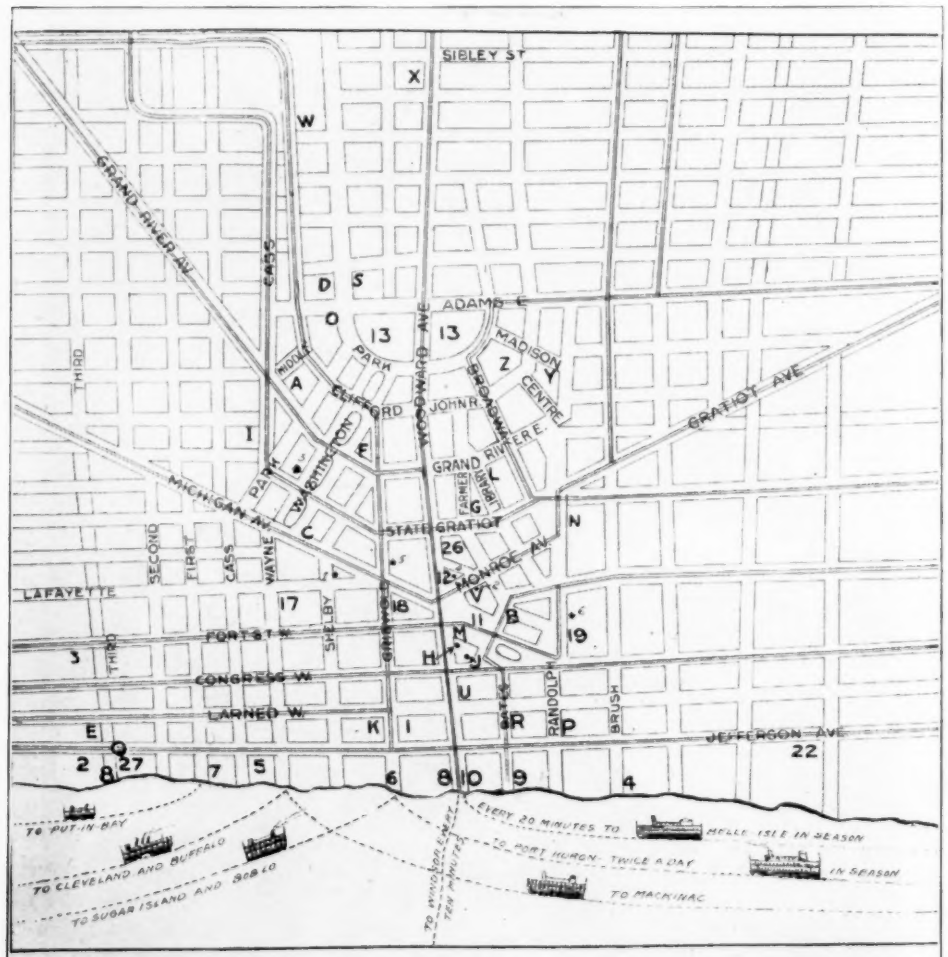
The Committee of Arrangements have planned a most elaborate program for your entertainment, the principal features of which will be a Reception and Grand Ball on Monday evening, August 24, the music for which occasion will be furnished by a famous Berlin orchestra of sixteen pieces. Other attractive features will be a theatre party, dinner and card parties, shopping expeditions, and a boat ride to Bob-Lo Park and dinner for the ladies, and a smoker and vaudeville performance for the men, and for all the members a day-light ride to the "Flats," the "Venice of America," on the palatial steamer Brittania, and a four-hour ride thru our parks and boulevards. All this for your pleasure and entertainment.

The same care has been exercised in arranging the business program, so that the various sections will not conflict, and you can attend any or all of them as you desire; there will be no tedious waits as the gavel will fall at the time appointed for the meetings. This meeting will be an innovation to you, so just throw a few things in your grip, and come along, and bring the ladies with you, as every preparation is being made for their care and comfort.

DETROIT EXECUTIVE COMMITTEE.

O. W. GORENFLO. W. A. HALL. J. H. WEBSTER. J. H. HACKNEY.
H. B. MASON. C. F. MANN. L. A. SELTZER. G. W. STEVENS.

PLAN OF A. PH. A. HEADQUARTER'S ENVIRONMENT AT DETROIT.



HOTELS.

A—Brunswick.
B—Burns.
C—Cadillac.
D—Charlevoix.
E—Grand Union.
F—Griswold.
G—Library Park.
H—Metropole.
I—Morgan House.
J—Normandie.
K—Norton.
L—Oriental.
M—Pontchartrain.
N—Ste. Claire.
O—Tuller.
P—Victory.
Q—Wayne.
R—Franklin.
S—Oxford.
V—Berghoff.
W—Clayton.
X—Hofman.
Y—Madison-Lenox.

DEPOTS.

1—Interurban. All suburban electric cars leave from this station.
2—Michigan Central; New York Central Lines
3—Union Station; Wabash, Pere Marquette, Canadian Pacific.
4—Brush Street; Grand Trunk, L. S. & M. S.

DOCKS (In Season).

5—D. & C. N. Co. To Buffalo, Cleveland, Toledo, Mackinac and Way Ports.
6—White Star Line. To Toledo, Sugar Island, The Flats, Toshmoo and Port Huron.
7—Str. Put-in-Bay. To Put-in-Bay and Sandusky.
8—Detroit & Windsor Ferry Co. To Belle Isle.
9—To Bob-Lo.
10—To Windsor. (Open year round.)

PARKS.

11—Cadillac Square.
12—Campus Martius.
13—Grand Circus Park.

PUBLIC BUILDINGS.

17—Post Office.
18—City Hall.
19—Court House.
22—Art Museum.
24—Municipal Building.

AMUSEMENTS.

12—Temple Theatre.
27—Wayne Gardens.
2—Columbia Theatre.
3—Washington Theatre.
4—Detroit Opera House.
5—Garrick Theatre.
6—Lyceum Theatre.
11—Gayety Theatre.

Duplicate small figures refer to City Ticket offices.

FACTS OF INTEREST ABOUT DETROIT, THE CONVENTION CITY.

It covers an area of 41.76 square miles, has twenty-nine public parks, among them being Belle Isle, the most beautiful island used for a public park in the world; and its handsome boulevard, which encircles the city, is said to be the finest in the country.

It is the first city in the world in pharmaceutical-manufacturing, automobile-production, pin-manufacturing, wire cloth, and stove-making, and several other important lines of industry.

More than 20,000 people are employed in the chemical and drug-industries of the city, the larger firms being, Parke, Davis & Co., F. F. Ingram & Co., Frederick Stearns & Co., F. A. Thompson & Co., and the Nelson, Baker Co., which firms are to be the generous hosts of the Association in the entertainment features of the Convention,—and at whose establishments visitors will be cordially welcomed.

The Local Secretary urges the members to make reservation of their accommodations in Detroit as soon as possible, as the city is a popular resort at the time of the Convention and much better service and accommodation will be assured to members by securing early reservation of their rooms. It is also requested that those who reserve rooms bring the letters in relation thereto with them in order to save any misunderstandings.

One of the most popular features of Detroit is the fact that it is surrounded by so many beautiful and interesting spots, places that can be reached by boats and trolleys, away in the morning and back in the evening. Some place new to go every day and all different, is the way it has been expressed a million times.

WHERE TO GO.

Amhertsburg, a quaint old Canadian town near mouth of Detroit River, overlooking Lake Erie; reached by the D. & W. boats and electric cars from Windsor; also good auto roads.

Ann Arbor, the home of the University of Michigan, forty miles from Detroit; reached by inter-urban cars and Michigan Central. Good auto roads.

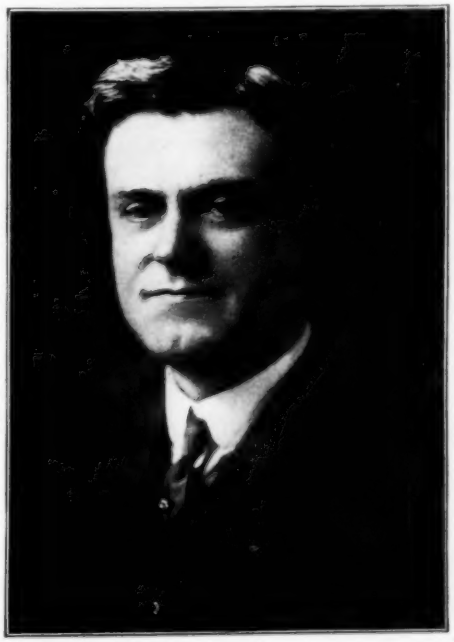
Belle Isle is known the world over for its beauty. Steamer every ten minutes from the foot of Woodward avenue, ten cents for round trip or ride on steamer all day for ten cents; also Jefferson avenue car line to Boulevard and thence automobile bus line operated by the City of Detroit; automobile fare six cents round trip.

Bob-Lo, popular and attractive island in Detroit River, reached by D. & W. steamers. Athletic field, bathing, boating, dancing and modern cafe; no liquors; 35 cents round trip.

Cedar Point, on Lake Erie, noted for its bathing and numerous summer attractions. Steamers Kirby and Put-in-Bay from Detroit; $1.25 round trip.

Chatham, Ontario; superb boat ride from Detroit up the beautiful and picturesque Thames River.

Detroit Art Museum, Jefferson avenue, open every day in year to public; fine pictures, sculptor works, art collections of various kinds including some of the finest foreign productions on this continent. Value many millions of dollars. FREE.



LEONARD A. SELTZER, LOCAL SEC'Y,
32 Adams Ave. West, Detroit, Mich.

CENTRAL VIEW OF

Hotel Pontchartrain — Hammond Building — Ford Building — Penobscot Building — City Hall — Dime Savings Bank Building — Free Press Building (Background)

The Flats, called the "Venice of America," about 30 miles from Detroit, and the finest water ride in the world; paradise for fishermen; reached thrice daily by White Star Line boats; fine motor-boat trip. Round trip rates 60 cents.

Fort Wayne, United States army post, located on river just below Detroit; reached by city cars.

Gladwin Park, fronts Jefferson avenue, four miles east of Woodward avenue.

Grand Boulevard, nearly twelve miles long, encircling central portion of city, and crossed by all the principal avenues. Excellent automobile trips around the city.

Grosse Pointe, the fine summer residence district of Detroit, should not be missed. Reached by Jefferson-Grosse Pointe cars and elegant auto driveway.

Kingsville, an Ontario resort; place of note, is on Lake Erie and can be reached by the W. E. & L. S. electric line from Windsor, giving strangers a beautiful ride through Canada.

Lakeside Inn is near Mt. Clemens, looking over Lake St. Clair, and can be reached by trolley; automobile ride being fine and auto boat route the best out of Detroit. Golf links and other amusements.

Mount Clemens, year round health and pleasure resort, just twenty miles from Detroit and near Lake St. Clair; reached by two trolley lines of D. U. R. and Grand Trunk railroad. Good auto roads.

Palmer Park is one of the finest show places of Detroit. Reached by Woodward avenue cars marked Log Cabin.

Pontiac, and the Oakland county lake region, finest fishing in Michigan. Fine lakes. Two hours from Detroit by two trolley lines. Fine auto roads.

Port Huron, overlooking Lake Huron, five hours from Detroit; White Star Line and D. & C. steamers; Grand Trunk and D. U. R. inter-urban.

Put-in-Bay, historic and beautiful island located in Lake Erie; fine bass fishing, bathing beach, boating, etc. Reached by steamer Frank E. Kirby and steamer Put-in-Bay. One hundred and twenty miles; round trip 60 cents.

River Riding is one of the summer pastimes at Detroit, the D. & W. Ferry Company operating the finest fleet of excursion steamers on fresh water in the world; hours and hours, up and down the river, just enjoying life, at a cost that is not greater than riding in a street car in your own city.

Stag Island, first stop this side of Port Huron. Good fishing, bathing, and excellent hotels and cottages. Ideal island for outing.

Sugar Island, at mouth of Detroit River, overlooking Lake Erie; reached by White Star Line steamers from Detroit and Toledo. Fine picnic park, bathing and numerous summer attractions; 35 cents round trip.

Tashmoo Park, a beautiful summer spot at the Flats, reached only by White Star Line steamers; athletic field, picnic grounds, boating and fishing; 60 cents round trip.

OUR CONVENTION CITY.

Majestic Building | Detroit Opera House | Temple Theatre

DETROIT CONVENTION COMMITTEE.

Leonard W. Seltzer, Local Secretary

Publicity Committee.

H. B. Mason, Chairman
Joseph Helfman
J. W. T. Knox
Norman Taylor
Andrew Cunningham
E. O. Geissler
W. A. Hall
G. W. Stevens
O. W. Gorenflo

Hotel Committee.

R. W. Rennie, Chairman
Geo. M. Schettler

Entertainment Committee.

O. W. Gorenflo, Chairman
F. Rohnert
W. W. Fiero
A. S. Parker
J. W. Seeley
A. J. Reisterer
C. P. Newell
W. C. M. Scott
H. C. Reinhold
P. E. Biddlecombe
A. M. Reid
F. O. Taylor

Membership Committee.

W. A. Hall, Chairman
C. A. Weaver
J. W. T. Knox
Prof. W. H. Allen
W. L. Scoville
W. Ohliger

Financial Committee.

C. F. Mann, Chairman
F. W. R. Perry
F. E. Bogart
W. H. Dodds

Reception Committee.

G. W. Stevens, Chairman
F. G. Ryan
E. H. Nelson
David M. Gray
Frank A. Thompson
F. F. Ingram
R. E. Bell
H. T. Carver
J. M. Francis
Chas. E. Knight
J. H. Hackney
J. H. Webster

Transportation Committee.

J. H. Webster, Chairman
G. W. Stevens
R. W. Rennie
E. Kimmick
H. C. Hamilton

Travelers' Committee.

F. W. Kerr
C. C. Creedon
G. H. Halpin
Walter S. Lawton
H. L. Bump

Ladies' Committee.

Mesdames J. H. Webster, R. W. Rennie, C. F. Mann
Mesdames H. B. Mason, W. L. Scoville, W. A. Hall
Mesdames C. A. Weaver, J. M. Francis, G. W. Stevens

THE SCIENTIFIC SECTION

A Partial List of the Papers to be Presented at Detroit.

Glycerite of Bismuth, by W. L. Scoville.

The Necessity of a Method of Estimating the Intrinsic Value or Essential Qualities of Coffee, by L. E. Sayre.

Third Alkaloid from Gelsemium, by A. E. Stevenson and L. E. Sayre.

Examination of Calycanthus Floridus for Alkaloids, by E. R. Miller and H. W. Brooks.

Stillingia Sylvatica, by E. R. Miller, R. L. Brooks and C. P. Rutledge.

The Analysis of Emulsions, by C. H. LaWall and L. Forman.

The Analysis of Some Additional Coffee Products and Coffee Substitutes by the Method Recently Proposed for the Detection of Chicory in Decoctions of Chicory and Coffee, by C. H. LaWall and L. Forman.

The Determination of Glycerin in Tablets and Confections, by L. Forman.

On Physiological Assaying, by F. W. Connolly.

New Science of Immunology, by F. E. Stewart.

A Photographic Presentation of Some Phases of Lloyd's Reagent, by J. U. & J. T. Lloyd.

Official and Other Tinctures, by M. I. Wilbert.

The Differentiation of Senna and Henna Leaves, by W. R. White.

The Quality of Morphine Nitrate and Morphine Acetate, by H. Engelhardt and O. E. Winters.

The Estimation of Elementary Phosphorus, by H. Engelhardt and O. E. Winters.

Estimation of Calomel, by R. I. Grantham.

Laboratory Notes, C. E. Vanderkleed and G. E. E'we.

Assay of Opium, A. R. L. Dohme.

The Structural Variation of Allspice, by Wm. Mansfield.

Notes on a Glycerin Substitute, by Jos. Feil.

Uniformity in Dosage of Radium Emanation, by W. J. Schieffelin.

Glands of Internal Secretion and Their Importance as Therapeutic Agents, by C. P. McCord.

The Pharmacy of Adrenalin, by C. P. Beckwith.

Cannabis Sativa: Is the Medicinal Value Found Only in the Indian-grown Drug? by H. O. Hamilton.

What is the Best End-point of the Reaction in the Frog-heart Method of Digitalis Assay? by H. C. Hamilton and L. W. Powe.

The Analysis of Cigarettes, Cigars and Tobacco, and the Use of Lloyd's Reagent in the Determination of Nicotine, by Azor Thurston.

A Simple Form of Nitrometer for the Assay of Spirit of Nitrous Ether, by T. J. Bradley.

Notes on the Assay of Hydrastis and of the Fluidextract of Hydrastis, by H. W. Jones.

Report of the Committee on the Quality of Medicinal Products, by E. L. Patch, Ch'm.

The Pharmacognosy of the Medicinal Rhamnus Barks, by E. N. Gathercoal.

<>

SECTION ON PHARMACOPŒIAS AND FORMULARIES.

This Section has always had as feature of its first session, after the Chairman's address, the reading of the reports from the Chairman of the U. S. Pharmacopœia Revision Committee; the Chairman of the American Pharmaceutical Association Committee on the U. S. Pharmacopœia; the Chairman of the National Formulary Revision Committee; the Chairman of the Committee on Unofficial Standards, and the Chairman of the Recipe Committee.

Dr. Bernard Fantus promises to discuss the Pharmacopœia as a help to the physician.

Mr. Beringer will present a review of the new Homeopathic Pharmacopœia.

Mr. Wilbert will give a review of the Norwegian Pharmacopœia, and possibly a review of the new British Pharmacopœia will be at hand.

The second session will be devoted to an exhibition of a large number of the new or modified U. S. P. IX and N. F. IV preparations, together with an exhibit by Professor Newcomb of the University of Minnesota of the crude drugs of both books. The preparations of the Exhibit have been made by a number of the members of the Association, each preparing six samples; the proposed formulas for the new editions being followed minutely in every case. Those who have prepared these specimens will report upon the merit of the processes. About fifty mem-

bers have taken part in the preparations of this display.

This session should prove of interest to the members of the Association and should materially assist the members of the two Revision Committees at this time in the Revision; the final manuscript for both books being in course of preparation.

E. FULLERTON COOK, Chairman.

<>

SECTION ON PRACTICAL PHARMACY AND DISPENSING.

Ferdinand W. Nitardy, Ph. C., the Chairman of the Section on Practical Pharmacy and Dispensing, has sent out the following list of suggestions for subjects of papers to be read before that Section at Detroit, and requests that answers or comments thereupon be sent to him in time to be included in the program of the Section:—

1. ℞ Creosote .....1 dr.
   Compound Syrup of Hypophosphites .....8 oz.
   Cod Liver Oil.....8 oz.
   Mix..... Sig. .....
   How would you fill it? Why?
2. What do you think of using a specially shaped bottle for dispensing poisonous or dangerous preparations? Where would you draw the line as to what should and what should not be dispensed in these kind of bottles?
3. What is the best container for dispensing ointments on prescriptions?
4. Does the ordinary shop label as supplied by most label houses give intelligent directions for use, proper and available antidotes in case of poisons, and such other information as is desirable? Are abbreviations desirable? Do you consider a bottle of spirit of camphor put out under a label reading "Spts. Camphor" any reflection on the pharmacist's knowledge?
5. How would you advertise your prescription department?
6. What constitutes good prescription service?
7. What utensils and apparatus do you consider necessary for the prescription department of the average pharmacy? What further equipment would be desirable?
8. How far may the druggist go in marketing his own preparations without usurping the rights of the physician or becoming unethical? Would there be any difference, ethically, in marketing preparations made by the druggist or those made by some co-operative organization to which he belongs? Would there be any difference from the same standpoint between preparations of such a co-operative organization and any regular patent medicine manufacturer?
9. What do you think of tinctures made by diluting fluid extracts? Should formulas for making tinctures that way, be given on fluid extract bottles?
10. What are essential qualities of a good cold cream? A good hand lotion? Can you offer a formula embodying these qualities?
11. What arguments have you in favor of the retail druggist making his own tinctures, syrups, elixirs and other simple pharmaceuticals? Have you any arguments against such practice?
12. How much of the trouble encountered by pharmacists in making official preparations is due to the use of crude materials of improper quality and subsequent improper keeping of the finished product?
13. Did you find it necessary to have your pharmacopœia rebound before it has been subjected to much wear? Is the binding as substantial as it should be or does it compare favorably with the binding of other books intended for constant use?
14. Has the average pharmacist such reference books as he should have? Would $50.00 to $100.00 expended on books of value to pharmacists be a paying investment from a commercial standpoint? What books would you include in five feet of reference books for the country pharmacist? The city pharmacist?
15. Do pharmacists as a rule select the right kind of boys for apprentices, considering they are the timber from which pharmacy of tomorrow will be built?
16. What plan would you suggest to make our profession more attractive to the better class of young men?

<>

THE GERMAN APOTHECARIES' TOUR.

The sympathy of the JOURNAL and of the members will go out to those participating in the European Tour of this society, on its summary interruption. On Friday, July 24, the party was scheduled for Vienna, the focus of the disturbance, and the day before the declaration of war they were to have been at Strasburg. In view of the disturbed state of the districts included in their itinerary, it is too much to hope that they will not experience great annoyance and that the trip can be further pursued. Our members accompanying the party are:— Gustav Bachmann, Mr. and Mrs. F. A. Bongartz, Mr. and Mrs. O. F. Clauss, Mr. and Mrs. F. W Connolly, H A. B. Dunning, Mr. and Mrs. T. Griffin, H. Kantruwitz and daughter, Mr. and Mrs. G. Kring, R. S. Lehman, Dr. A. W. Miller, Mrs. Charles Rehfuss, Leonette Rehfuss, E. W. Runyon and wife, H. W. Schimpf, Mr. and Mrs. T. H. Tucker, Mr. and Mrs. P. H. Utech.

A CORRECTION.

BROOKLYN, N. Y., July 18, 1914.

The Editor of the Journal:

DEAR SIR—Referring to your editorial about the Convention City, allow me to say that the French word *"etroit"* means "*narrow,*" and D'étroit by derivation means the place on the narrow (of the river). Compare: Des Moines, the place of the monks. You see how near and natural the derivation really is.

I appreciate the JOURNAL so highly that I do not like to let this little *faux pas* pass unnoticed. Sincerely yours,

LORENTZ CANTOR.

<>

For the Editor:

I write about a matter dear to my heart. I desire to awaken an interest in a National Veteran Druggists' Association under the auspices of the A. Ph. A. If the requirements for membership of the Chicago Veteran's Association were adopted by such an Association, viz., twenty-five years' connection with pharmacy and the furnishing of a photograph and autobiography, the future historian of American Pharmacy would have "a cinch." Give me the autobiography of the present leaders,—and—you have the History of Pharmacy. And if the Chicago experience is repeated in the country at large, most men will have less trouble to write their biography before their funeral than after.

Men who make their mark, generally come to the surface in the space of time of a quarter-century.

I would suggest that local chapters be formed in larger cities, or in counties or states, but let the A. Ph. A. be the focus.

Whether the local chapters will write Goodfellowship on their banner is a matter for them to settle. But, if you ask for my opinion, I say in hundred horse-power voice, "Let Goodfellowship Reign Supreme."

We, in Chicago, prohibit the discussion of business, religion or politics at our meetings; thus avoiding all infection of friction microbe. We lead, uplift, and reform professional spell-binders and speakers, and don't touch the blessed article "Reform." Aside from these, nothing is prohibited, not even indulgence in cold water;—but no cold hearts are tolerated.

The principle of our branch is to foster the *entente cordiale,* to cast a hue of gold over the setting sun, and to demonstrate the fact that filthy lucre is not paramount everywhere. With us, all are alike, rich or poor, —all are friends,—all work for all and one for all,—and our emblem, a pink carnation, blazes the way,—in burning rays,—

"Cheers for the living, and tears for the dead."

I wish the leading members to give the matter a pre-convention thought. I am satisfied to start the Krupp Guard of the A. Ph. A., the organizers, to thought on this subject.

If these constructing and consulting engineers formulate a working formula, I feel fully recompensed in having started "the ball rolling." W. BODEMANN.

<>

THE DRUGGISTS' NATIONAL HOME.

To the Editor:

Probably every druggist in the United States knows the history of the Home. A property costing some $120,000, was sold to the druggists of the United States for $60,000, this including repairs.

Some $10,000 was sent in and the prospect looked good to have it all paid for in a few months. During the summer of 1913 the Home was open to all and was well patronized. We were promised donations from all over the United States. The property was bought on the lease system, the trustees signing papers that if $20,000 was not paid by April 10, 1914, the property would revert back to the owner with all repairs. During the winter of 1913-1914 the house was practically closed, only three people being there. The trustees became discouraged, and one by one they resigned their offices, until only I was left.

April 10 Mr. Hedenburg claimed the property according to the contract, and it was turned back to him. He then stated he had done this to protect himself, and he then appointed me his agent and put me in charge of the property, and with the understanding the deal was still open to the druggists of the country, and he (Mr. Hedenburg), would give them the first chance.

Mr. Hedenburg and I am still sanguine over it that the druggists will rally and accept this beautiful place. Since October I have cared for the place without any charges. May 1, 1914, the Home was opened for the reception of visiting druggists and

has been visited by many to prove the statements made by the trustees that it has paid expenses so far this season. It is now open to all who wish to make it a visit.

The property, as stated, cost $120,000—it was bought for $60,000. It is now in good repair and we can have it according to the original contract. We have fifteen applications, now, for admission. All of them are from old druggists who have spent a lifetime in their work, and are now "down and out."

We have six other applications from old druggists who have money and can and will pay a good price, but want to spend their days at the Home. If the N. A. R. D. and the American Pharmaceutical Association would take this up, appoint the trustees from their executive committees, the entire sum could be raised in a short time and in five years the place would be self-sustaining. At present there are no officers, so it will be only necessary to elect a board of managers. The full amount need not be paid down. Two dollars and a half per year (5 cigars) from each druggist in the U. S. will give us and sustain for us a Home that we will all be proud of.

Respectfully,
E. B. HEIMSTREET.

Book Reviews

THE BULLETIN OF THE MASSACHUSETTS COLLEGE OF PHARMACY, June, 1914. Published by the College. Edited by Theodore J. Bradley, Dean.

The very excellent *brochure* of the College has come to the A. E.'s table full of interesting matter in relation to the M. C. P. Its special items are the report of Treasurer Godding, which shows the College to have assets over all liabilities of $238,227.94; the comment upon the Course in Commercial Pharmacy, conducted by Professor La Pierre; President Packard's address in full to the graduating class of this year, and the address of Joseph H. Cooney, a member of the class of this year on "Cut Prices."

The entire *ensemble* of the Bulletin is most praiseworthy from cover to cover.

THE PHARMACEUTICAL SYLLABUS. Second Edition. Outlining a Minimum Course of Instruction of Twelve Hundred Hours. Revised and Published by the National Committee, Representing The American Pharmaceutical Association, American Committee of Pharmaceutical Faculties, National Association of the Boards of Pharmacy. Copyrighted. All rights reserved. Price $1.25. Postage 10 cents.

The pharmaceutical profession will welcome this syllabus with enthusiasm, for it is the first one published in this country of a national character, and one which will have a most potent and beneficial effect upon pharmaceutical education throughout the country, and which, by the elevation of instruction, will give to pharmacy a standing, long-jeopardized by lax and inefficient standards, varying according to locality and individual opinion.

Here is a well-ordered plan of instruction, which, if definitely adhered to, will result in immense advantage to the profession.

The committee are to be congratulated on their admirable work and they should receive the thanks of every well-wisher for pharmacy in the world, and it is earnestly to be hoped that no time will be lost in the adoption of this plan of instruction by every institution in the United States.

Copies may be secured of H. I. Taylor, Treasurer, Albany, New York.

Section on Commercial Interests

Papers Presented at the Sixty-First Annual Convention

SHAPE OF TABLETS FOR EXTERNAL USE.

OTTO RAUBENHEIMER, PHAR. D., BROOKLYN, N. Y.

The manufacture of tablets and, quite especially, their evolution, is unquestionably an American innovation. From the compression of a pill, the *flat, round* shape of the tablet has resulted, and it has become the custom to manufacture tablets of this particular shape throughout the civilized world. In the course of time, larger tablets have been manufactured, such as lithia tablets, which were very convenient for the extemporaneous preparation of lithia water. Next came tablets, which were intended for the preparation of solutions for external use, some of which were even of a poisonous nature. It has undoubtedly been a very serious mistake to manufacture tablets for external use, of identically the same shape of those for internal use, as they can easily be mistaken for one another, even by physicians themselves. On account of the many, the very many, accidents, some of which have even proven fatal, from the internal use of "Bichloride Tablets," which have usually been mistaken for headache tablets, numerous suggestions as to color and shape have been made. The craniums of pharmacists, chemists and even those of the public have been quite busy in making suggestions.

Color: There is no question but that the color of the poisonous tablet exerts some psychological action upon the patient or the public. The German Pharmacopœia in the case of "Bichloride Tablets" orders a red color by means of eosine. The supplement of 1891 of the Netherlands Pharmacopœia, 3rd edition, specifies a blue color, which is also used in Russia. In the United States "Bichloride Tablets" have been manufactured of a white, blue, green and red color.

Shape of Bichloride Tablets: Ever since "Bichloride Tablets" have become official in the 3rd edition of the German Pharmacopœia (1890) they have been made of cylindrical shape, about twice as long as thick. At least three manufacturers in the United States have realized the necessity of a special shape of these poisonous tablets, one making them diamond shape, another clover-leaf shape, and the third in the shape of a triangle. There is no question that these distinctive shapes have contributed to prevent accidental poisonings. As a further precaution "Bichloride Tablets" in the United States are also put up in distinctively-shaped bottles, of rough corrugated exterior, these bearing a poison-label, and in addition, each tablet is stamped "Poison."

A great many suggestions have been made regarding the proper shape of the

deadly "Bichloride Tablet." A former chairman of the Section of Pharmacy and Dispensing of the A. Ph. A. is of the opinion that the shape of a coffin, adorned with skull and cross-bones, should be adopted as the proper shape and that this will prove an efficient safeguard. Another active A. Ph. A. member suggests the grotesque shape of a skull, or the peculiar form of a kidney. There is no question but that all these suggestions have been made in good faith, with the sole object of safe-guarding the patient and the community.

Shape of Tablets for External Use: The Bichloride "accidents" have plainly demonstrated the desirability and also the necessity of a *distinctive and uniform shape of tablets for external use.* The tablets for internal administration are round, and this shape, which has been adopted throughout the civilized world, cannot be very well changed. What is needed, and needed very badly, is a distinctive shape, *but not a fancy shape,* of tablets for external use. The writer has given this subject much consideration. He has reached the very simple conclusion that all tablets for external use should be made *Flat* and *Square,* with four corners and that these corners should not be rounded.

Advantages of Square Tablets for External Use: 1. A distinctive square shaped tablet cannot be *mistaken* for a round tablet at any time.

2. The tablet has four corners and thus it will mark plainly its use for solutions intended for external application.

3. Such a tablet cannot be easily swallowed as, owing to its four corners, it is liable to stick in the throat.

4. By being *Flat* and *not Cubical* the tablet can readily be broken into several pieces, to increase its solubility.

Poisonous External Use Tablets: If the external-use tablet is poisonous, then, in the opinion of the author, the following precautions should be taken:—

1. The tablet should be square and flat.

2. The tablet should be colored.

3. Each tablet should be wrapped *individually,* and the wrapper should be marked "Poison."

As to the proper color for a poison tablet, I would recommend eosine. Red has always been the danger-signal and for that reason, the psychological action of a red tablet might be stronger to prevent mistake than that of any other color. As to the individual wrapping, the author is in favor of the German method in the case of "Bichloride Tablets," namely the wrapping of each tablet with black paper, which in white letters bears the name "Poison," as well as the skull and cross-bones.

Conclusion. In view of the enormous use of tablets in the United States, I would make the following three additional recommendations:—

1. The adoption of a monograph or general chapter on tablets, in one of our legal standards, the U. S. P. or the N. F. It might be news to some pharmacists in the United States, to learn that a Chapter on Tablet Triturates is official in the National Formulary under "Pulveres" as "Pulveres in Tablettis."

2. That the U. S. P. or N. F. should make an explicit statement that *all tablets for external use* should be made of a *square and flat shape.*

3. That *poisonous tablets* intended *for external use* should have the *same*

square shape, should be *colored,* and should be wrapped *individually with black paper* which in *white ink bears the word "Poison."*

By the adoption of these simple recommendations, the dispensing and the use of external tablets and poison tablets would be thoroughly safe-guarded. The adoption of these simple recommendations would result in uniformity in the shape of these tablets all over the United States and this arrangement would be far more desirable than the enactment of heterogeneous laws by different states, which would result in a multiplicity of shapes and colors for such tablets, and be a hardship for manufacturers and pharmacists. Remember, *round* tablets for *internal* administration and *square* tablets for *external* use only. Let us be "on the square!"

DISCUSSION.

Mr. Mayo said there was one objection he could see to the use of eosin, and that was, that a color for poison should be selected which was characteristic. A pink, or any shade of red, was not sufficiently characteristic, as there were already so many tablets colored in that way that it would be no indication of any peculiarity. There were no tablets, so far as he was aware, that were colored blue, except methylene-blue tablets, and blue was a color which had been adopted for corrosive sublimate in hospitals. The suggestion offered by the author did not include the specific name of a color. He wished to move, therefore, that the Section on Practical Pharmacy and Dispensing recommend to the House of Delegates the passage of a resolution suggesting the introduction into the Pharmacopœia of a monograph on tablets in accordance with the suggestions contained in Mr. Raubenheimer's paper. He expressed his satisfaction that the author had not specified any color, because he did not think any shade of pink was desirable, either in U. S. P. or N. F.

Mr. Nitardy moved to amend, that Mr. Raubenheimer and Mr. Mayo be appointed as a committee to draw up suitable resolutions to be introduced in the House of Delegates.

This motion was seconded by Doctor Schneider; but the Chair suggested that this matter be presented a little later, when there were more members present, and so the matter was passed.

Mr. Raubenheimer made the suggestion in regard to blue, that it was very difficult to get a blue color which was permanent, because all blues, except one, as he recalled, were reduced by bichloride. There was only one blue color that could be used.

Mr. Mayo replied that "One was a-plenty."

Mr. Windloph said he did not know whether Mr. Mayo was referring to tablets for internal use, and suggested that his establishment manufactured bichloride tablets colored blue.

Mr. Mittlebach thought that conscientious druggists throughout the country were anxiously awaiting a solution of this problem of throwing around the use of these dangerous tablets some adequate safeguard. Mr. Raubenheimer, he said, had been working faithfully to this end; he had read some of his papers on this subject. It occurred to him that some other word than "tablet" might be coined to meet this situation. A tablet meant something taken internally, and he thought it would be a decided advantage if some other word could be used to express the idea in mind. He also thought it would be well to put these dangerous tablets on the market in small packages, with permission to dispensers to sell them in original package only. The trouble was the result, usually of the breaking of the package, as was the habit with many druggists throughout the country. They often sell these strong poisonous tablets in pill-boxes, or in some other way, not distinctive, and they were taken home by the purchaser and put in the medicine-closet, alongside of aspirin tablets, in a box of perhaps the same shape, with the result that mistakes often occurred. If druggists could be compelled to sell these poisonous tablets in original packages only, in some proper and distinctive shape, he was satisfied it would "help the cause."

Chairman Lascoff commended this as a good suggestion.

Section on Pharmacopoeias and Formularies

Papers Presented at the Sixty-First Annual Convention

SOME OBJECTIONS TO MATERIA MEDICA STANDARDIZATION WITH REFERENCE TO THE U. S. PHARMACOPŒIA.*

F. E. STEWART, PH. G., M. D.

The text of my sermon will be found in the Journal of the American Medical Association for Nov. 30, 1909, p. 1645: "A thoroughly up-to-date Pharmacopœia —one which will truly reflect the best medical practice of the present time—will contribute more to sane drug therapeutics than any other one thing."

To prepare a new materia medica product for introduction into the United States Pharmacopœia, it is necessary first, to give it a name conformable with scientific nomenclature, (the first step in standardization). This is objected to by certain commercial interests who desire property-rights in the name of each new product, for the purpose of creating a lasting monopoly in its manufacture and sale.

The next step consists in the free discussion of each new drug in medical and pharmaceutical journals, societies, schools and colleges. Certain objectors are entirely in accord with such discussion, provided the discussion is favorable to the therapeutic claims they make for their controlled products. But free and impartial discussion, when it results in diminishing sales, is not viewed with equanimity by commercial introducers, after they have spent, possibly, a hundred thousand dollars in advertising.

The next step is the fixing of tests for identity and purity, and the enforcing of the standards thus evolved by pure food and drug laws. Honest manufacturing houses favor this kind of legislation. It is only the dishonest manufacturers who object.

The standardization of galenical products, to fit them for a place in the Pharmacopœia, includes determination of botanic source, physical and chemical structure, pharmaco-dynamic and therapy-dynamic properties, and therapeutic uses. Manufacturers depending upon concealing one or more of these factors, to obtain and retain monopoly of sales, object to such standardization.

Again, manufacturers depending upon a fictitious demand, created by misleading advertising, object to standardization.

Another objection to standardization, is, that standardization means *leveling* of all materia medica products to common standards, thus taking away from commercial introducers, the advantage to be derived from advertising their products as better than those of their competitors.

*Read before the Section of Pharmacopœias and Formularies at the Nashville Meeting, August, 1913.

What the medical profession must know in order to treat the sick properly, are the side-effects, limitations and comparative value of new products, in their relation to each other, and to older and better known products, employed as therapeutic agents in similar conditions. It is just this kind of levelization, that the medical and pharmaceutical professions must insist upon, if we are ever to restore public confidence in drugs as remedial agents.

Suppose that the manufacturers of potassium iodide, were able to do so, and should, organize a campaign against the newer syphilitic remedies, because their success meant injury to the sale of potassium iodide. Suppose the manufacturers of quinine should endeavor to prevent the destruction of mosquitoes because malaria is propagated by mosquitoes and the sale of quinine is dependent upon the existence of malaria. Such action on the part of the manufacturers, would be bitterly resented by the public. Yet this kind of opposition to the therapeutic standardization of new materia medica products, is actually going on at the present time.

Demand created by false advertising of unwarranted claims, represents unfair competition. Business taken away from competitors, in this way, is stolen. The remedy for unfair competition, is to be found in drug-standardization. It is not surprising that those guilty of unfair competition object.

Let me quote the exaggerated claims made for a certain alleged new remedy by way of illustration. I have coined the name "Antigonensis" to describe the advertised product.

"Antigonensis is a powerful and harmless systemic antiseptic in the most varied medical and surgical infections. It checks beginning sepses and often effects brilliant recoveries in desperate ones. Recent investigations show that, with its direct bactericide energy, it exerts a marked electrolytic and leucocytogenetic action, and thus greatly aids the natural protective forces of the body.

"Used topically, by mouth, rectally, intravenously or by inunction, Antigonensis forestalls the development of sepsis from accidental or operative wounds, or childbirth, arrests beginning medical and surgical infections, and often achieves brilliant recoveries in apparently hopeless cases."

It is evident that pharmaceutic and therapeutic standardization, would soon *"levelize"* this product and rob the manufacturer of the advantage to be obtained by claiming it to be better than competing products.

The true ideal of pharmacologic practice includes coöperation between the medical and pharmaceutical professions, and the manufacturing houses supplying them with materia medica products, to prevent such kind of advertising. This coöperation can never be secured, until all concerned are willing to consider the public health, as of greater importance, than the *making of money*. It is admitted that the *making of money*, is absolutely necessary, for the existence of the doctor, druggist and manufacturer. The doctor must live on his fees, the pharmacist on his sales of medicines, and the manufacturer on the profit obtained by selling his wares. But dishonest commercialism should be abolished. The principle expressed by the motto "caveat emptor" (let the purchaser beware) is a very dangerous principle, applied to medicine or pharmacy.

Objections to materia medica standardization, come from manufacturers of commercially-controlled materia medica products of all kinds. For the purpose

of obtaining a clear conception of the objections and objectors, let us classify the objectors into their classes as follows:

1. Secret Medicine Manufacturers.
   a. Retail druggists supplying medicine of their own make, which they recommend for self-medication, trusting patients to make their own diagnosis for the most part, but sometimes venturing to make a diagnosis for them.
   b. So-called "patent" or proprietary medicine manufacturers, who prescribe medicine at wholesale, without diagnosis.

2. Manufacturing Chemists and Pharmacists dealing in commercially-controlled specialties.
   a. Manufacturers of medicinal-mixtures of secret formulas, for doctors to prescribe.
   b. Manufacturers of mixtures concerning which the medicinal ingredients are published, but regarding which the working formulas are suppressed.
   c. Manufacturers of chemical synthetics protected by patent, and registered names.

The objectors to standardization, are as varied as the character of the manufacturers. Behind the objections, are motives equally complex. All object, because they do not want to part with their monopolies. Some object, because, in addition to that reason they wish to create a demand by misleading advertising.

"How can inventors protect capital, invested in the working and development of new inventions, from interference and competition, if inventors publish full knowledge of their inventions, for the benefit of scientific classification and standardization?" This question is frequently asked by the pharmacists and the reputable manufacturers, engaged in the pharmacal and pharmaco-chemical industries.

The answer is to be found in that clause of the Constitution of the United States, that gives to Congress the power "to promote the progress of science and the useful arts, by securing, for limited times, to authors and inventors, the exclusive right to their respective writings and discoveries."

Inventors of new and useful arts, machines, manufactures, and composition of matter, may obtain proper protection by patenting their inventions.

There are good reasons for believing, that the proper application of the patent-law to medical inventions, would promote progress in medical science and in the useful arts of pharmacy and drug-therapy. But to accomplish this object, it would be necessary to establish some kind of a commission, board of control, or bureau of materia medica, working with the Patent Office and the Courts, to limit the patenting of materia medica products to substances new and useful, *in fact*, also to act as experts in infringement-cases, requiring higher knowledge of medical and chemical science and arts, than that possessed by the legal fraternity.

The patenting of new materia medica inventions under such a board of control, would promote materia medica standardization. For the statute exacts, "That, before any inventor or discoverer shall receive a patent for his invention or discovery, he shall make application therefor, in writing, to the Commissioner, and shall file, in the Patent Office, a written description of the same, and of the manner and process of making, constructing, compounding, and using it, in such full, clear, concise and exact terms, as to enable any person skilled in the art or

science to which it appertains, to make, construct, compound and use the same."

It may be answered that the prejudice against patenting materia medica inventions manifested by the medical profession is a serious hindrance. This is true. However, this prejudice might, in all probability, be overcome by the adoption of some plan to prevent dishonest exploitation of new materia medica products by commercial introducers, also to secure free and impartial discussion of commercially-controlled products by the medical and pharmaceutical press.

Much has been done in this direction by the Council on Pharmacy and Chemistry of the American Medical Association, and much by the pure food and drug laws. The Shirley amendment to the national pure food and drug act, aimed against misleading advertising, if properly enforced, will be of great service. Similar bills advocated by "Printers Ink" are being passed by the States, and, as they are backed by the advertising fraternity and their agents, we have a right to expect salutary reform. But we need some kind of strong central board of control, in which the various interests involved may be represented, and have a voice in the administration of affairs.

"But," say some of the objectors, "the seventeen year limit, provided by the patent law, is not long enough to get our money back. It requires an investment of at least one hundred thousand dollars in advertising a new product, before the investment becomes remunerative. And it must also be considered that a certain proportion of ventures prove unprofitable. That is why we devised the scheme of patenting our products, under their chemical names, and registering coined names as trade-marks, to be advertised as the names of the products. By forcing the coined names into the common language, as nouns, and retaining ownership in them, we are enabled to extend our monopolies indefinitely."

This plan, for defeating the object of the patent-laws, was set aside by the decision of the Supreme Court of the United States, in the Singer Sewing Machine case in 1895. According to this decision, the name of a patented article cannot be commercially-controlled after the patent expires.

"Then why 'patent' materia medica products at all?" say the objectors. "Why not 'trade-mark' them, and keep the process of their manufacture secret? A trade-mark never expires and the manufacturer, by controlling the name of the product, possesses a perpetual patent."

The weakness of this argument is apparent, when one considers that any person who discovers, by legitimate means, how to make the same product, has the right to do so, and advertise the fact. He also has the right to employ its currently-used name, either as the title of the product or as a synonym. For example, what is to hinder any manufacturer of hexamethylamine from using on his label, as synonyms, all of the fourteen so-called trade names or trade marks of that drug?

"We are perfectly willing to aid the government in fixing standards for our products and placing them in the Pharmacopœia, if we can still maintain monopoly," say the objectors. "What we desire is, to secure the advertising advantage of having our products listed in pharmacopœias, dispensatories, medical dictionaries, text books and other medical and pharmaceutical literature. We also desire discussion in professional journals and societies. We want the medical

colleges to teach the students how to use our products. But we want to hold on to them."

That is the same as saying, that these objectors want the medical and pharmaceutical professions, colleges, societies and press, to do their detail-work without pay. "No," say the objectors, "we are willing to pay for the work, if we can get it done in this way. What we object to, is giving up our monopoly."

To this, medical scientists reply that to do the work for pay, would be the same as going into partnership with the manufacturers in a commercial business, and the turning of the educational machinery of the profession into a great advertising bureau for the commercial exploiting of alleged "new remedies." Those engaged in materia medica commerce, are no longer in a judicial position in relation to materia medica, and what they say about it must be received *cum grano salis*.

If this objection is true, then the professional ideals taught by the colleges of pharmacy are false, and there can be no profession of pharmacy.

But is it true? I do not believe it. It becomes evident that pharmacy is a profession, when it is considered that the proper introduction of new materia medica products requires the coöperative work of physicians, pharmacists, chemists, botanists, bacteriologists and other professional men, learned in the knowledge of their respective branches and expert in *technic*. Coöperation on the part of the professional societies and press, is also required. The result of this coöperative work belongs to the workers, not to individuals. It must be contributed to the common fund, for the benefit of all concerned. This means, that the introduction of new materia medica products, should be changed from a commercial or monopolistic plan, to a professional or coöperative plan.

Now we are in position to consider the question of patenting new materia medica products, in connection with a professional system. It seems to me, that the question is one for the professions of pharmacy and medicine to decide. If they are willing to consent to it, as adapted to the promotion of progress in medical science, and in the arts of pharmacy and drug therapy, then let it be done.

But it is evident that it is unfair to ask any one person or manufacturing house, to do business on a professional basis, while competitors are doing the same business on a commercial basis.

Until manufacturers are willing to place their business upon a professional basis, they have no right to expect professional coöperation. I believe that the profession is willing to endorse and coöperate with manufacturers, under the protections of the patent laws, just as they are willing to coöperate with the publishing houses, under the protection of the copyright laws, provided that medical science and the arts can be promoted thereby.

The object of the copyright and patent laws, is to promote progress in science and the useful arts, by securing, to authors and inventors, the right to prevent others from copying their respective writings and discoveries for limited times. The object of the trade-mark law is to protect all concerned, from the counterfeiting of labels and brand-marks. But all plans for obtaining and fostering perpetual monopolies, are a hindrance to science, and stand in the way of prog-

ress in civilization. Monopolies of this character, ought to be opposed by all patriotic citizens, and especially by physicians and pharmacists.

It is evident from the foregoing that a thoroughly up-to-date pharmacopœia will contribute more to sane drug therapeutics than any other one thing. The U. S. Pharmacopœia is preëminently the standard for medicinal drugs, chemicals and pharmaceutical preparations in the United States. It is the basis upon which rests all materia medica literature, including the dispensatories and text books. The information contained in the Pharmacopœia, is taught in the medical and pharmaceutical schools and colleges, and circulated throughout the country, in the literature of pharmacy, chemistry, and therapeutics.

The U. S. Pharmacopœia is "the law of the land," not only for Inter-state commerce, but also for state commerce, in most of the States. Whatever goes into it, is placed there, after mature consideration by a convention of representative physicians, pharmacists and chemists, who, collectively, decide its policy and appoint the committee for its decennial revision. The influence of the Pharmacopœia upon the pharmaceutic, pharmaco-chemic, and therapeutic arts is therefore incalculable.

To prepare new materia medica products for admission to the Pharmacopœia, their standardization is necessary. Materia Medica products cannot be properly standardized, except by the cöoperative work of the medical, pharmacal, and chemical professions, whose functions are to determine, for each product, its nomenclature, source or genesis, physical and chemical properties, pharmacodynamic and therapy-dynamic actions, therapeutic applications, and proper methods of preparation. This function is being constantly exercised by the Committee having charge of the revision of the Pharmacopœia.

To obtain a thoroughly up-to-date Pharmacopœia, the commercially-controlled materia medica must be considered. The rule adopted concerning the admission of controlled-materia medica products, to the Pharmacopœia follows,—the Committee was authorized to admit,

"Any synthetized product of definite composition which is in common use by the medical profession, the identity, purity, or strength of which can be determined. No compound or mixture shall be introduced, if the compositions or mode of manufacture thereof be kept secret, or if it be controlled by unlimited proprietary patent rights."

Some of the synthetic products still controlled by patents were admitted, because the patents were about to expire. So-called "trade names" were not admitted. Abbreviations for long chemical names were coined and adopted.

In the light of the above facts, it is evident that the rule adopted by the committee, which was doubtless the best that could be devised under circumstances then existing, is not adequate to secure proper standardization. Something should be done to clear up the question of nomenclature, so that a new product may be admitted under its currently-used name, the same to be adopted either as the official title or as a synonym. Also the question of ethics, in regard to patenting new materia medica products, either as to product, or process, or both, should be decided, and proper action taken in the premises.

The proper application of the patent law to materia medica inventions, the same to be administered under the advertisement of a board of control, repre-

sentative in character, working with the Patent Office and the Courts, would probably result in securing the object of the patent law in this connection, i. e., the promotion of progress in medical science, and in the useful arts of pharmacy, chemistry and drug therapeutics.

The *personnel* of such a board of control is well exemplified by the U. S. P. Revision Committee. It is truly representative in character, and is already engaged in the work of standardization. If to this Committee, Congress would give advisory authority to act in expert capacity, in conjunction with the Patent Office and the Courts, and would provide sufficient appropriation to meet the necessary expense, all objections to drug standardization, on the part of inventors and manufacturers, would disappear, also the ethical problem would be solved, and an embarrassing situation relieved.

THE PHARMACOPŒIA, THE DRUGGIST AND THE PHYSICIAN.*

R. H. NEEDHAM.

That the Pharmacopœia is the "Book of Books" among chemical and pharmaceutical publications must be conceded, when we look about and, after reviewing the great mass of literature, we find that we are compelled to turn to it, as a rule and guide in selecting and standardizing drugs and chemicals. It is not perfect, and probably never will be, but this does not detract nor lessen its value, when considering it as a book of standards, because there is no other work equal to it, let alone being its superior.

Druggists who are familiar with the Pharmacopœia are aware of its value, though we regret to say that but few of them make any use of it, except as a reference to simples. When it comes to formulas and preparations, almost every one of the rank and file, consult a Dispensatory, instead of the Pharmacopœia. As a Dispensatory consists of notes taken from one or more pharmacopœias, the matter is second-hand in a way, and coming from so many sources, it gives the reader, if he is not very careful, quite confused ideas as to some preparations. Druggists will not agree upon the procedure for making a preparation for this reason, each claiming their preparations U. S. P. Should you ask them to make the preparation, using the U. S. P. text, you would be apt to receive a mild protest, as they would probably inform you that they preferred to use the Dispensatory rather than the Pharmacopœia as the latter gives all quantities in the metric system and they have difficulty in converting weights and measures. I consider it a shame and disgrace for the druggist to make such an excuse, when metric weights and measures can be so readily obtained and at such reasonable prices. Yet this bugbear is in the way, and nothing short of a national law making the metric system the official one will place the pharmacopœia where it ought to be among the druggists.

From my view-point and experience in teaching, I wish the other systems of

*Read before the Section of Pharmacopœias and Formularies at the Nashville Meeting of the A. Ph. A., August, 1913.

weights and measures were buried and forgotten and I further wish that the new Dispensatory would omit old forms entirely.

I fail to see how we are to make any headway with physicians concerning the Pharmacopœia under present conditions. First, until the metric system is forced upon the doctors they will neither read or write it, but will continue to use the old forms. In the second place, I declare, without fear of contradiction, that they are being educated away from the pharmacopœia instead of toward it. I refer to scholastic courses of education, now, and not to commercial education.

We all know where the latter leads to, without further comment. When the time for teaching Materia Medica and Pharmacy are so shortened as to give but thirty to forty hours' work in medical courses, kindly tell me, how, when, or where, can an instructor find time enough to teach anything concerning the pharmacopœia or of its listed drugs and preparations. I have tried for several years, asking for more time each year, in return being assigned shorter hours, until I am asked this year to teach these two important subjects within twenty-five hours. The *curricula* of other medical schools are following the same plan and a remonstrance is met with the declaration that the student does not need a longer time. Pharmacology and therapeutics are the important subjects, consequently our future physicians will know nothing of the pharmacopœia, except as an authority to be quoted, never to be used. Neither is there any time or place for the National Formulary. Thus we perceive that while the druggist may acquire a very complete knowledge of the pharmacopœia the practical application largely ceases when we reach the physician, because of his ignorance regarding it.

We must be alive to these conditions and exert a different influence in educational matters, else we as druggists will some day awake to the fact that the pharmacopœia will be the center of attraction of a mutual admiration society, composed of all other scientists, to the exclusion of the practicing physician.

THE NEED FOR GREATER UNIFORMITY IN LAWS RELATING TO THE MANUFACTURE, SALE AND USE OF POISONS AND HABIT-FORMING DRUGS.*

M. I. WILBERT, PH. M., WASHINGTON, D. C.

The untoward harm that might result from the promiscuous distribution of admittedly potent drugs and chemical substances was early recognized as being sufficient reason for the enactment of legislation designed to restrict the manufacture, sale and use of articles that might reasonably be classed as poisons or habit-forming.

Based on this generally accepted need, laws have been enacted for practically every political division constituting what is now designated as the United States. A compilation of the essential features of these several laws has been made, in

*Read before the Section on Education and Legislation at the Nashville Meeting of the A. Ph. A., August, 1913.

connection with a general study of the laws relating to public health matters, by the Public Health Service of the United States, and published as Public Health Bulletin No. 56, entitled a "Digest of Laws and Regulations in force in the United States Relating to the Possession, Use, Sale and Manufacture of Poisons and Habit-Forming Drugs." Even the most cursory comparative review of the requirements embodied in the several laws included in this compilation will suggest the imperative need for some form of correlation between these laws and the desirability of having greater uniformity in their general provisions and requirements. To bring this matter more directly to the attention of pharmacists, who, above all, should be interested in the efficiency and equity of laws of this kind, I have endeavored to compile some of the requirements in statistical form.

In connection with the laws regulating the practice of pharmacy, it may be pointed out that all of the fifty-four political divisions enumerated have some form of pharmacy law. Two states, New York and Pennsylvania, require graduation, and a third state, North Dakota, will require graduation in 1915 as a prerequisite to registration. Forty-four of the political divisions by statute-law require practical experience, four require five years' training, thirty require four years and ten require three years. In three of the remaining states, the boards of pharmacy have adopted regulations requiring four years of practical experience, or its equivalent, for registration. Forty-two of the political divisions provide for revocation of license for cause. In forty-one political divisions the pharmacy laws apply only to retail drug stores. In but two states, California and Oregon, are the manufacture of drugs mentioned, and in two other political divisions, the State of Washington and the District of Columbia, the law applies, equally, to wholesale and retail dealers. In seven additional political divisions, the law can be interpreted to apply to other than retail dealers.

In connection with the provisions relating to the manufacture, sale and use of poisons, the variation is equally great, if not greater. Up to the present time, no satisfactory definition for the word "poison" appears to be available, and the several laws vary, from "any substance which, in doses of 5 grains or less, is destructive to human life" to "any drug, chemical, medicine or preparation liable to be destructive to adult human life in quantities of 60 grains or less." In some states the law is made to apply to "any deadly drugs"; "any article belonging to the class of medicines usually denominated poisons," or "articles of a nature poisonous to the human system or to animals."

Equally chaotic conditions exist in connection with the schedules of poisons included in the several laws, as now enforced; these laws enumerate a total of one hundred and sixty-four articles. Thirty-nine of these occur but once, twenty-seven occur twice and twenty occur three times. The following table presents a list of the articles enumerated most frequently, in the order of their occurrence:

Corrosive Sublimate	in 38 laws
Opium	" 36 "
Chloroform	" 35 "
Carbolic Acid	" 34 "
Arsenic	" 34 "
Oxalic Acid	" 33 "
Hydrocyanic Acid	" 32 "
Potassium Cyanide	" 30 "

Arsenic, preparations of	in	29 laws
Croton Oil	"	27 "
Chloral Hydrate	"	26 "
Mineral Acids	"	25 "
Aconite and preparations	"	25 "
Belladonna " "	"	25 "
Digitalis " "	"	25 "
Cotton root " "	"	24 "
Strychnine	"	24 "
Oil of Savin	"	23 "
Ergot and its preparations	"	22 "
Oil of Tansy	"	22 "
Cantharides and its preparations	"	21 "
Nux vomica " " "	"	21 "
Oil of Almonds, essential	"	20 "
Creosote	"	20 "

Among other frequently mentioned drugs and preparations, are conium (18), colchicum (17), Henbane (14) and veratrum viride (13). Strangely enough, morphine in its several forms, occurs in but a total of 16 laws. Cocaine and its salts are enumerated in 14 laws, and "coca or its preparations or alkaloids" occurs in but one. Among other substances that occur but once, are salts of barium, arsenate of copper, sulphate of copper, compound solution of cresol, ether, nitroglycerin and santonin. This feature of the laws relating to the sale of poisons, is no more variable than are the other restrictions usually included in these laws. For instance, of the fifty-four laws now in force, fifty require the word "poison" on the bottle or container, though there are a number of variations in the requirements as to how the word is to occur. Thirteen laws require the enumeration of antidotes on the label. Forty-five laws require some form of poison-register and thirty require that the seller make due inquiry that the substance is to be used for a lawful purpose.

Legislation designed to restrict the sale of narcotic drugs, is equally variable, and, in this connection, it may be pointed out that while thirty political divisions restrict the sale of opium, only seven laws include "the alkaloids of opium." Twenty-seven mention morphine, five mention codeine, sixteen mention heroin and sixteen include derivatives of the substances enumerated. The sale of cocaine is legislated against in no less than forty-eight of the political divisions, but so far as known, only sixteen restrict the sale of hydrated chloral.

In thirty-one of the political divisions, the law requires the preservation of prescriptions or orders for narcotic drugs. Eight of these laws do not specify the period of time, one requires preservation for one year, three require preservation for two years, one requires preservation for three years, seven require preservation for five years, and no less than eleven require that the prescription be permanently kept on file.

Up to the present time a total of eighteen states, have enacted legislation relating to the sale and use of methyl alcohol, and the greater number of these states, declare it unlawful to sell products intended for the use of man, either for internal or external purposes, which contain methyl alcohol or wood spirits. Several states define a drug or a food as being adulterated, if it contains any methyl or wood alcohol. Little or no attention has as yet been given to the toxicity of methyl alcohol by absorption and apart from the several provisions included under occupational intoxications, no legislation has been noted that is designed to restrict or discourage the use of methyl alcohol in confined places.

Legislation designed to prevent the misbranding of drugs and of foods, while of comparatively recent origin, is already showing evidence of variance and vagaries. Some effort has been made, in connection with Public Health Bulletin No. 56, to show the variations existing in the requirements of the several state laws, but these variations are so well known to manufacturers and others who attempt to do an interstate business, that it will not be necessary to do more than call attention to them at this time.

The need for greater uniformity in state legislation on matters relating to public health, has been discussed repeatedly and several organizations, notably the American Bar Association, are making consistent efforts to bring about greater correlation in the statutes of the several states. The newly organized National Drug Trade Conference, gives promise of developing into a clearing-house for legislation relating to the several branches of the drug-business and incidentally, therefore, to the laws relating to the manufacture, sale and use of poisons and habit-forming drugs. From every possible point of view the development of such a clearing-house would be of advantage to all concerned and it should be encouraged by the members of the several organizations interested. The consistent censoring of proposed drug legislation, by members of a representative body, in which all branches of the trade have a voice, would serve to eliminate from our state laws much of the provincialism so evident at the present time. In conclusion it may be asserted that, if laws relating to pharmacy could be designed on a broader basis, they would serve to provide ample protection for the health and welfare of the public, and yet avoid many of the objectionable requirements which tend to hamper trade and unduly interfere with the conduct of legitimate business.

DISCUSSION.

Dr. Beal said that Mr. Wilbert had called very emphatic attention, in a very successful way, to one of the crying evils of the day, and to the fact that pharmacists in the past had operated upon too narrow lines, and said that by their failure to really establish a series of laws which would be a protection to the public, while at the same time they gave satisfaction to the pharmacists themselves, that they had been laying up trouble for themselves. The time had come when it was necessary to face about, and pharmacists should remember that their own best interests would be conserved by looking after the best interests of the public. He thought this matter should be brought to the attention of the National Drug Trade Conference, with the recommendation of this Section—or the recommendation of the Council—that an attempt should be made to draft some general form of legislation that would be sufficiently comprehensive, and at the same time provide an effective remedy for these evils.

Mr. Freericks expressed himself as having been very much impressed by the remarks of Mr. Wilbert, and that his own study of the various laws of the country pertaining to the subject of pharmacy, went to prove that, nearly always, there was some provision that, if tested, would be found invalid, if brought before the courts, that, while there was a general effort being made to improve such legislation, there was, usually, some local issue or condition, which induced the pharmacists of any given State to introduce into the draft of the bill presented, something that it should not contain. It had occurred to him—and he believed this was in line with a suggestion made in the paper just read—that it would be well to have, in connection with some association, a permanent committee, to which all intended legislation from the different States could be submitted for comment and suggestions. Because, no matter how many model laws might be drafted, there were always local conditions that would induce the "tacking-on" of certain provisions outside of the particular one considered in any single model draft. He felt sure, that if some central commission or committee were

charged with the business of looking after these things, it would be a great help—a "clearing-house," or something of that kind, as Mr. Wilbert had suggested.

Mr. Wallace thought that all must agree with the remarks of Messrs. Wilbert, Freericks and Beal, and suggested that a clearing-house had already been established in the National Drug Trade Conference, for this very purpose. It was true that, up to the present time, nothing but anti-narcotic legislation had been discussed before that body, as that was such an important subject that it necessarily occupied all the time the delegates could give to the question of legislation. The resolutions creating the National Drug Trade Conference, specifically provided that this work was the particular purpose of its establishment, which statement, he thought, would be borne out by the proceedings of the past year.

Mr. Freericks agreed, that it was true that the National Drug Trade Conference could work out the purpose indicated by the writer of the paper.

MANUFACTURE OF ABSORBENT COTTON.

As a general proposition absorbent cotton cannot be economically manufactured on the small scale, as the operation requires technical experience, special apparatus and a plant representing large capitalization. Some manufacturers, so-called, eliminate the preliminary manufacturing operations and buy the amount of absorbent cotton they may need, and use it as "raw material," preparing from it the various antiseptic cottons or specialties by their particular formulas. On the commercial scale the following outline represents the steps usually followed by the average manufacturer: The fat is first removed from the cotton by prolonged boiling under pressure with a solution of sodium hydrate or of an alkaline rosin-soda soap solution, and thorough washing with soft water. The cotton is then bleached by immersion in a clear solution of chlorinated lime, the latter being removed by one of several methods. One method consists in profuse washing with water, treatment with very dilute hydrochloric acid, immersion in a bath of sodium hyposulphite to remove the liberated chlorine, and addition of stearin soap. This reacts with the hydrochloric acid still retained by the cotton, stearic acid being liberated, this imparting to the cotton the peculiar "crunching" between the fingers when handled, a quality some users demand. This "crunching," however, may be removed by treatment with a very dilute solution of sodium bicarbonate. If desired, the absorbent property of the cotton may be destroyed by rinsing the material in a solution of alum. To secure a uniformly and satisfactory product thorough and copious washings with water after all operations must be rigidly observed.—*The Pharmaceutical Era.*

Section on Education and Legislation

Papers Presented at the Sixty-First Annual Convention

A SUGGESTION OR TWO.*

JOHN M. LINDLY, PH. G.

The lines of education are not fixed, but are alterable. Changes, additions and improvements are made as the signs of the times may indicate. What may have been regarded as of minor importance in one generation, may be considered of prime importance in the next, or *vice versa*.

Educators may outline a course of study which they regard as ideal, as including all the essentials, as meeting the demands of the age,—but the finished product, the student, when he steps out into the world, may find that he does not fit into place in its affairs as easily as he had anticipated, and the public also discovers something lacking in him.

At the recent meeting of the Iowa Pharmaceutical Association, the list of queries contained the following question:— "Should not our Colleges of Pharmacy insist that their graduates be better prepared as business men, so that at least the ordinary operations of charging, crediting, posting and making-out a bill may be understood?"

Such an implied criticism was common enough ten years ago, and is asked with more insistence to-day and there must be some reason for asking the question, as the list of queries was prepared by a member of the State Board of Pharmacy.

If the student, on leaving school, goes into business for himself, a knowledge of bookkeeping is absolutely necessary. If he becomes a clerk, which most do at first, such a knowledge is almost equally important. If he does not possess knowledge of such matters his employer is displeased, criticises him as incompetent and condemns the institution that has conferred its degree upon him.

But the educator may say, that bookkeeping, or a knowledge of business, is not a part of a course in Pharmacy; that the student is supposed to have obtained such knowledge in the public school, or in some commercial college. However, if he has not obtained such knowledge in the public school, or been trained in a business college, our student in pharmacy enters into the exercise of his profession with but one hand trained, the other untrained and awkward. And, of course, his progress cannot be as smooth as he or his employer expected. The employer of a Graduate in Pharmacy expects to receive the assistance of a skilled man, an

*Read before the Section of Education and Legislation at the Nashville Meeting, August, 1913.

all-around, competent man. As Pharmacy, nowadays, is more of a commercial or business matter than formerly, as compounding has become a less prominent feature in it, the College of Pharmacy that desires to turn out its graduates fully prepared for the business of Pharmacy, must see to it that its graduates have some knowledge of the principles and rules of business. If the student has already secured such knowledge, well and good. But if he has not such knowledge, the College of Pharmacy should afford him the opportunity of acquiring it. A few lectures on the principles of business, and on the essentials of bookkeeping, delivered during the closing weeks of the school year, to both juniors and seniors, will prepare them to meet the customer at the counter, fit them to do business with business-method and make them ready to turn their knowledge of pharmacy,—which has up to the present time only fitted them for the laboratory,—into coin, that alone buys bread and butter and keeps the body and soul together.

There comes to mind, as an illustration, the case of a preacher who was a good-looking young man, pleasant and agreeable, a graduate of a prominent theological seminary, but whose success was very indifferent, owing to his great disregard for the rules of elocution. This defect was noticeable in emphasis, and particularly in inflection. A fine sentence was often spoiled, by the use of inflections the very opposite of that which should have been used. His mistakes were like discords in music. His hearers were offended by his false rhetoric and did not endure it long. When asked if the theological seminary from which he graduated, did not instruct their students in elocution, he replied that it did not; that the student was supposed to have received such instruction in the preparatory college.

On being interrogated as to whether he had taken such instruction in college, he replied that the course was optional and, as he had not been interested in it, he had not taken it. Thus he had been allowed to pass through both the college and the theological seminary, without having studied or having received any instruction in the art of elocution, or public speaking. When he graduated from the seminary, he was supposed to be prepared for the career of a public speaker, bue he was not. A public speaker, yet he had no knowledge of the art of public speaking! The art by which it was expected he would make use of the knowledge acquired during his many years of study *had been entirely neglected.* The ostensible preparation of young men for the career of public speaking, that does not include any instruction in the art of oratory and rhetoric is a glaring absurdity.

The College of Pharmacy that will most effectually serve the patrons and public, is that one which provides that its students, is not previously so instructed, shall receive proper instruction in the principles and rules of commercial transactions, in order that its students shall be prepared for the business of pharmacy as well as for the laboratory.

DISCUSSION.

Mr. Anderson thought this paper a very valuable one, and one eminently worthy of consideration. The subject touched upon, was one that had agitated the retail drug-trade for many years, where it was felt that the graduates of colleges should be better versed in the business side of pharmacy, and that it was the duty of the colleges of pharmacy to so prepare

their students. He believed that it was mainly through the agitation of the retail drug-trade, and the presentation of such papers as this, that the colleges had been stimulated to give more attention to the commercial side of pharmacy, that, to-day, there were very few colleges in the country that did not make some provision for this form of instruction. The Pharmaceutical Syllabus, which was in process of making, made a particular point of this, and outlined a certain number of hours that must be devoted to the teaching of commercial subjects, such as bookkeeping, making-out bills, banking, the value of notes, etc., all of which were in use in the every-day practice of pharmacy. This course, was, of course, supposed to embrace, also, everything that pertained to the conduct of a drug-store, such as the handling of customers, and of stocks, buying and selling, etc. He believed in the future the pharmacists of the country might not only expect, but also might rely upon the fact, that the graduates from the various colleges,—particularly those who took up the Syllabus in the serious manner they should, and abided by its regulations—would come to them better prepared in the duties of this important and essential part of pharmaceutical education.

THE TREND OF MODERN MEDICINE.*

RUFUS A. LYMAN, DIRECTOR OF THE SCHOOL OF PHARMACY, UNIVERSITY OF NEBRASKA, LINCOLN.

In these days of rapid progress in both the fundamental and the special medical sciences, one hesitates to prophesy as to what the future may bring. Being in close touch with the drug men of by own state, Nebraska, I hear the complaints of the rank and file of the profession, and am forced upon every occasion to play the part of the optimist. The most common lament is, that pharmacy is a lost cause. Nebraskans are not alone in this belief for if I remember rightly, in the last five years, I have heard some half-dozen papers read by men of prominence in the National Association, urging druggists to take up urinalysis, bacteriology, and, even, first aid to the injured, as side lines, in order that they may have something of a professional nature to do. Of course, as usual, and as it must always be, the pharmaceutical manufacturer and the physician that prefers to prescribe the manufacturer's preparations rather than those made locally, come in for their share of the blame for the condition of things. But now, there is advanced another and a more serious cause, namely, that preventive medicine, serum therapy, and therapeutic measures, other than with the use of drugs, will make professional pharmacy superfluous. With this in mind, perhaps it is worth our while, for a moment, to glance over the field and note what physiological basis, if any, drug therapy has, and what we may expect of it in the future.

We are living in an age of medical fads. Like mushrooms, they appear in a night, mature in a day, and disappear as quickly and as silently as they came. Perhaps chief among the faddists, are those who have placed upon the nervous mechanism an undue importance,—maintaining that the various abnormal physiological conditions, that we find in disease, to be due to so-called nervous influences, and to be rectified thru some re-adjustment, mechanical or otherwise, of the nervous system, or of some structure in close relation to that system.

Such ideas are untenable, if we but stop to study the physiology of the cell

*Read by title before Section on Education and Legislation at Nashville Meeting, 1913.

or of the highly organized animal. In the single-celled animal, there occur all the usual physiological phenomena such as digestion, absorption, assimilation, excretion, reproduction,—in fact all the physiological processes necessary for the maintenance of life, and the preservation of the species, without the existence of a nervous system, or anything suggestive of it. In more highly organized animals, we have the appearance of a nervous system, which reaches its highest development in man. While the nervous system is necessary in our complex mechanism, for the production of quick motor-reactions, the fact should not be lost sight of, that the functions of the various organs of the body are regulated or correlated thru the action of chemical bodies and are primarily independent of the central nervous system. To illustrate what I mean, I shall discuss a few important tissue-products which are typical examples of chemical bodies producing physiological correlations.

The simplest, at least the most familiar example of a chemical correlation in the body, is the relation which exists between the carbon dioxide tension in the blood, and the activity of the respiratory center. It is now pretty definitely settled that while carbon dioxide may not be the only factor, it is certainly the chief factor in initiating the inspiratory act. At birth, the fœtal circulation is interrupted, thru the detachment of the placenta. The carbon dioxide which is formed in the infant's body, by the tissue metabolism, can no longer be eliminated thru the maternal circulation. It therefore collects in the blood, until a sufficient quantity is formed to stimulate the respiratory center, and produce the first inspiration, and its constant formation maintains respiration thereafter. While the quantity of oxygen in the blood may vary greatly, without influencing the activity of the respiratory center to any marked degree, an increase of 8 percent of the carbon dioxide content of the blood, will increase the amount of air inspired 100 percent.

Largely thru the efforts of the Russian physiologist, Pawlow, and his pupils, and the English physiologists, Bayliss and Starling, many chemical correlations are known to exist in the digestive mechanism. For example, it has been thought that the activity of the pancreas was due largely to the effect of impulses reaching it thru the central nervous system, reflexly or otherwise. Now, it has been shown that the pancreatic cells become active, and produce their secretion, only when a definite chemical body reaches them thru the blood. This chemical body is known as "secretin" and is formed from "prosecretin," a product of the intestinal mucosa, and the hydrochloric acid coming into the intestine, from the stomach. The "secretin" enters the blood and, thru it, reaches the pancreas, where it produces a profuse flow of pancreatic juice. Again, the pancreatic secretion contains a powerful proteolytic enzyme known as "trypsin." "Trypsin," as such, does not exist in the secretion, as it comes from the gland but a zymogen, "trypsinogen," does. In the intestine, "trypsinogen" comes in contact with a body formed in the intestinal mucosa, known as "enterokinase" and, thru its action, "trypsinogen" is converted into "trypsin." Not only are there chemical bodies, elaborated in the digestive glands, which have a pronounced effect upon their own activities, but certain glands produce, in addition, internal secretions, containing substances which have a marked effect upon metabolism in gen-

eral. The pancreas is one such. It has been shown that the internal secretion of this organ contains a body, which enters and circulates in the blood and is absolutely essential for the proper metabolism of sugar.

Of the ductless glands of interest in this connection, the thyroid and the suprarenals are the most important. The physiologically active body in the thyroid secretion, is a combination of iodine with a protein molecule. As is well known, the absence of this compound in the infant, results in a lack of development in every tissue in the body, and a lessened mentality. If the thyroid is removed, or the normal secretion is interfered with thru disease of the organ, a series of symptoms follow which ultimately prove fatal. These conditions may be prevented, either by the intransplantation of a normal gland, or by the constant administration of the fresh, or the prepared gland. Epinephrine, a basic substance, is the active constituent of the suprarenal and is supplied constantly to the blood. This body is essential for the maintenance of tonicity in the muscles,—skeletal, vascular, and heart. Removal of the gland, results in death in a very short time.

A most interesting set of correlations, is found to exist in the reproductive organs. The general effect upon metabolism, of the removal of the male gland, is too well known to need discussion here. A similar effect is observed in the female, after removal of the ovaries, a more important relation, however, has been proven to exist between the ovaries and menstruation, and between the ovaries, uterus and the mammary glands. It has been shown that menstruation is brought about by a chemical substance, formed in the ovary at certain times, which stimulates the mucous membrane of the uterus to greater activity, resulting in increased growth. This process is not interrupted, even when all nervous connections with the organs concerned are severed. Likewise, the mammary glands atrophy, with the extirpation of the ovaries. There is no doubt but that the secretion of milk is profoundly influenced by nervous impulses. On the other hand, Bayliss and his pupils have shown, that the growth of the mammary gland, which takes place during pregnancy, is due to a chemical body which is formed in the fœtal body *in utero*. This body enters the maternal circulation, and stimulates the growth of mammary tissue or causes the formation of milk. These experiments using rabbits, macerated the fœtal bodies, and made a watery extract. By introducing this extract into the circulation of non-pregnant rabbits, they were able to cause an increased growth in mammary tissue and ultimately the formation of milk.

While I have mentioned some of the more important chemical correlations which are known, there are many others, and it is not unscientific to presume, from what we already know, that there are many more, the chemical and physiological nature of which we do not know. From our present knowledge, it would appear that the fundamental physiological processes are due to chemical reactions of a more or less complex nature, and that the nervous system is a system that has become specialized as a necessary convenience, rather than as an absolute necessity in the production of those processes.

Ehrlich, and many others, have raised the question that if there are chemical bodies elaborated within the animal body capable of producing such profound

physiological changes, why is it not possible, or even probable, that there are many substances, which are normally not a part of the body, which may produce similar changes in whole or in part. The utopian dream of medical science, is to find a set of such substances with which the physician can control the functions of the body at will. Ehrlich believes there are many such bodies, and, to me, it is a significant fact, that he who has done so much work in the field of immunity, has practically deserted the field of serum therapy, in order to devote the best years of his life to the study of the physiological action and therapy of drugs. At present, his efforts are being directed toward the discovery of drugs which act as specifics in certain diseases, such as quinine in malaria. While his discovery of the specific action of the arsenic compounds in syphilis, is an epoch-making discovery, we may be sure that it is only a beginning of the revelations which the future has in store. The establishment by our leading universities, of laboratories for the experimental study of drug therapy, is a most potent proof of its importance.

Viewing the future of medicine from the standpoint of how physiological phenomena are produced in the body, knowing to some extent how these phenomena may be modified by the intra- and extra-corporeal products, and realizing the work to be done in connection with the collection, preservation, preparation, standardization, and dispensing of such products for therapeutic use, it seems hardly proper to consign professional pharmacy to the superfluous science class.

HEALTH IN GEORGIA.

What North Carolina is doing and what Georgia is not doing for the health of their respective populations makes a suggestive contrast. The Progressive Farmer, of Raleigh, tells us, in an editorial The Constitution reproduces, that in a state-wide campaign against typhoid the state furnishes the vaccine free and the county the services of physicians free. The process extends through the regulation three treatments.

It is merely a matter of arithmetic that in course of time, and a comparatively short time, North Carolina will subjugate the scourge of typhoid. The vaccine is about as absolute a preventive as cowpox vaccine for smallpox.

Georgia's attitude toward disease shows in discouraging contrast. It is not the fault of the State Board of Health. The hands of this body are tied by lack of authority and still greater lack of money. It is willing and ready to practice the conservation of human life on a large and habitual scale, but it can do nothing until machinery is placed at its disposal.

Georgia has long enough been neglectful of her greatest asset, human life. It is the only state in the Union without a system for collecting vital statistics. The Legislature that assembles to-day can perform no service of a more constructive nature than by enacting the vital statistics and the public health bills.—*Atlanta Constitution.*

College and Society

THE PREAMBLE TO THE CONSTITUTION OF THE CINCINNATI BRANCH.

"The American Pharmaceutical Association is recognized the world over as the Trustee of true Pharmacy in the United States, and should in our judgment include among its membership every real Pharmacist, and everyone interested in the advancement of Pharmacy, and its allied branches. Its lofty aims and ideals, its work in the interest of Pharmacy and for the proper recognition of Pharmacists entitles it to a more general support. The time has come in its history when Pharmacists and those interested in Pharmacy should be brought into a more direct and frequent touch with each other under its guidance, so that its earnest endeavor, and the spirit of advancement prevailing within its ranks be more generally appreciated, and its store of knowledge more readily disseminated. In order to make effective these present-day needs, the members of the American Pharmaceutical Association residing in Cincinnati and its vicinity have resolved to organize, and do now organize to maintain a permanent branch thereof, and for that purpose adopt Constitution and By-Laws."

<>

A large party, consisting of the members of the City of Washington Branch, American Pharmaceutical Association, and their guests, visited the Experimental Farm of the Department of Agriculture at Arlington, Va., in charge of Dr. W. W. Stockberger and several assistants, one day last month.

The party was carefully shown through that part of the farm devoted to the drug-plant experiments and had explained to them the nature and progress of the investigations being carried on there. Dr. Stockberger very carefully discussed the folly of many of the recently-advertised get-rich schemes connected with plant culture, and told of many interesting and peculiar inquiries received at the Department of Agriculture concerning plants and their development.

Later the party was taken to the farm buildings where experiments are being carried on in connection with the production of rose water.

<>

The Indiana Pharmaceutical Association has elected as officers for the ensuing year:—

President—Ernest W. Stahlhuth, Columbus, Ind.

First Vice President—Charles Gelolin, Nashville, Ind.

Second Vice President—W. S. Margowski, Delphi, Ind.

Third Vice President—A. J. Fraizer, Muncie, Ind.

Treasurer— Frank H. Carter, Indianapolis, Ind.

Secretary—Wm. F. Werner, Indianapolis, Ind.

Executive Committee—E. W. Stucky, Indianapolis, Ind.; D. H. Houks, Goshen, Ind.; J. T. Shandy, Terre Haute, Ind.

<>

THE COLLEGE OF PHARMACY OF THE STATE UNIVERSITY OF IOWA.

IOWA CITY, IOWA.

The baccalaureate address to the graduates of the University, was given by the Reverend Charles Richmond Henderson, D. D., of the University of Chicago, Sunday afternoon, June 14th. On the evening of the same day occurred the annual Social Service meeting, under the auspices of the U. N. and U. W. C. A. This meeting was addressed by the Reverend Effie McCollum Jones, pastor of the Universalist Church at Waterloo.

Tuesday of Commencement week was Alumni day and various classes held their reunions. In the afternoon a series of "stunts" were carried out, as well as a game of base ball between an alumni team and the "Varsity," in which the latter team was the winner.

The twenty-eighth annual commencement of the College of Pharmacy occurred Wednesday, June 17th, together with the commencement exercises of the eight other Colleges of the University. The address was given by the Hon. Alexander MacDonald, LL.D., managing editor of the Toronto Globe, on the subject of Internationalism and the University. Two students received the second degree in Pharmacy, that of Pharmaceutical Chemist. They were Homer D. Long, Ph. G., 1911, and Thurston J. Long, Ph. G., 1913. The degree of Graduate in

Pharmacy was conferred upon the following people: Herbert Frederick Doden, Wilton, Junction; Leslie Knapp Fenlon, Clinton; Robert C. Hahn, Muscatine; Raymond C. Harvey, Guttenberg; Francis P. Hess, Lone Tree; N. Reno Hohmann, Iowa City; Clyde E. Jacobs, Iowa City; Edward Kiedaisch, Keokuk; John Frederick Keidaisch, Keokuk; Walter E. Palmer, Murray; Carl C. Powers, Murray; John Fred Babe, Marengo; Harry E. Rutenbeck, Lost Nation; Maud Wieland, Red Oak.

The Dean Teeter's prize of membership in the American Pharmaceutical Association for recognition of organic drugs was awarded to H. M. Doden, of Wilton. Mr. Doden also attained the highest rank in Practical Pharmacy for the Senior year, thereby winning membership in the Iowa Pharmaceutical Association offered as prize by Prof. Zada M. Cooper.

Prof. Kuever's prize of a year's subscription to the JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION offered to the Junior student attaining highest rank in Practical Pharmacy was awarded to L. T. Dyk, of Orange City.

Among the Alumni and former students of the College who were in the city for the Commencement festivities were J. M. Lindly, '89, of Winfield; Edith Seymour, '05, of Fort Dodge; J. A. Pierce, '09, of Denver; B. H. Davis, '08, and wife, of Onawa; C. L. Kettlewell, ex-'91, and wife, of Carson.

The College was represented at the annual convention of the State Pharmaceutical Association held at Burlington the second week of June, by Dean W. J. Teeters and wife, Professor Zada M. Cooper, Professor R. A. Kuever and Dr. C. S. Chase. Both Professor Kuever and Dr. Chase appeared on the program. Mr. E. L. Boerner, former Dean of the College of Pharmacy, and Professor Emeritus attended also.

The marriage of Professor R. A. Kuever and Miss Ruth Hindman occurred at the home of the bride's mother at Iowa City at 8 o'clock on the evening of June 20th. Only relatives and intimate friends were present. Professor and Mrs. Kuever will spend a month in the West and, after their return to Iowa City, will be at their new bungalow home on the West Side.

On the evening of June 13th, Dean and Mrs. Teeters entertained the members of the Senior class at their home on the West Side.

KENTUCKY PHARMACEUTICAL ASSOCIATION.

The annual convention of the Kentucky Pharmaceutical Association was held at Lexigton on June 16-17-18, and, after a pleasant and successful meeting, elected the following officers for the ensuing year:—

Leon Evans, Mayfield, President; W. H. Tibballs, Somerset, First Vice-President; Miss Alice Caden, Lexington, Second Vice-President; George Morland, Brandenburg, Third Vice-President; J. W. Gayle, Frankfort (re-elected), Secretary, and V. Driskell, Carrollton, Treasurer. Executive Committee: R. S. Berryman, Versailles; William J. Johnston, Mayfield, and G. R. McGinnis, Louisville.

Cerulean Springs or Dawson Springs will be the next year's meeting place, the exact place not having been determined upon.

The following list of names, from which to select a member of the State Board of Pharmacy Examiners was agreed on to be presented to the Governor, who annually makes the appointment from the members of the State Pharmaceutical Association: Dr. C. Lewis Diehl, of the Louisville College of Pharmacy; Simon N. Jones, Louisville; C. J. Clark, Paris; R. S. Berryman, Versailles, and Charles Lordier, Ashland. Dr. Diehl is at present a member of the board.

Mr. Henry P. Hynson, of Baltimore, was a special guest of the Association and gave many interesting and instructive talks out of, and during the meetings, besides winning the hearts of the men as well as the ladies.

At the last session the members had the pleasure of hearing Dr. L. F. Kebler, Chief, Drug Division, Bureau of Chemistry, U. S. Department of Agriculture, who gave a most interesting discourse on the work done by his department, in enforcing the Pure Food Laws, etc.

Six new applications for membership to the A. Ph. A. were received.

<>

MARYLAND PHARMACEUTICAL ASSOCIATION.

The annual meeting of this Association was a lively one, in which Professors Charles E. Caspari, Jr., and J. F. Hancock were in active opposition to one another on legal questions involving pharmacists. Dr. Caspari criticised the action of some pharma-

cists, in being obstructive of the work of the State Board of Health. Dr. Hancock defended the action of the druggists.

President George M. Beringer addressed the convention, and made a felicitous address touching upon the importance of fraternal feeling among the druggists of the state and nation.

The Association elected the following officers for the ensuing year:—

J. D. Leary, President; George A. Bunting, Eugene Hodgson and Henry Howard, First, Second and Third Vice Presidents, respectively; E. F. Kelly, Secretary, and S. Y. Harris, Treasurer; Members of the Executive Board, J. Fuller Frames, David P. Schindel and H. G. Wendel; Pharmacy Commissioners, one to be selected by the Governor, D. R. Millard, J. E. Hengst and H. C. Spetzler.

Thirty new members were elected, bringing the total up to about 450.

<>

MISSOURI PHARMACEUTICAL ASSOCIATION.

The thirty-sixth annual meeting of the Mo. Ph. A. and the twenty-third annual convention of the Mo. Ph. Travelers' A. met at Pertle Springs, Warrensburg, June 16-19. The women do not have an auxiliary but have been attending the meetings since the one at Brownsville, in 1886. They have an entertainment program of their own and look after the children with games and prizes.

More retail druggists attended the meeting this year than usual, but the number of travelers was not as large as last year.

The Stevens Bill (H. R. No. 13305), intended to regulate retail prices and stop cutting, was the subject of much discussion and was endorsed by the Association.

The Kansas City R. D. A. introduced a resolution, censuring those manufacturers who give jobbers a special discount. After an extended discussion, the resolutions were finally adopted.

The reading of papers and discussions that followed occupied much of the time of the seven sessions. Some of the papers were illustrated with specimens and accompanied with demonstrations which added to their practical value and the attention given them.

The exhibits were confined to pharmaceutical preparations, articles of historical interest, soda fountain syrups and similar goods. These exhibits have been an annual feature of the Mo. Ph. A. for some years past.

The Association added thirty-seven new names but will drop more than twice that number. A net membership of over 700 will remain. The by-laws were amended so that delinquents may be dropped after one year, instead of waiting three years as heretofore.

The third Tuesday in June, 1915, was the time and Pertle Springs the place selected for the next meeting. The Association has already convened fourteen times at Pertle Springs. The decision to return next year was unanimous.

The new officers are: O. J. Cloughly, St. Louis, President; Hon. Louis Grother, Cole Camp, Honorary President; J. A. Trimble, Butler, First Vice-President; John M. Hawkins, East Prairie, Second Vice-President; H. D. Llewellyn, Mexico, Third Vice-President; William Mittelbach, Boonville, Treasurer; Dr. H. M. Whelpley, St. Louis, Permanent Secretary; Jacob Lieberstein, St. Louis, Assistant Secretary; F. W. Robinson, Warrensburg, Local Secretary.

Council: Ed. G. Schroers, St. Joseph, Chairman; R. A. Davidson, Essex, Vice-Chairman; Professor D. V. Whitney, Kansas City, Secretary; Alfred W. Pauley, St. Louis; Joseph Clinkenbeard, Lamar; with the President, Secretary and Treasurer, ex-officio.

President O. J. Cloughly announced the following chairmen of committees: Deceased Members, Fred. R. Dimmitt, Kansas City; Entertainment, George R. Gibson, St. Louis; Drug Adulterations, Minnie M. Whitney, Kansas City; Exhibits, J. A. Koppenbrink, Higginsville; Ladies' Entertainment, Mrs. H. M. Whelpley, St. Louis; Legislation, F. H. Fricke, St. Louis; National Formulary, Carl T. Buehler, St. Louis; Membership and Attendance, R. A. Davidson, Essex; Papers and Queries, Professor Francis Hemm, St. Louis; Trade Interests, J. A. Kinder, Cape Girardeau; Transportation, George M. Scheu, St. Louis; U. S. Pharmacopœia, William Mittelbach, Boonville; Welcome, R. A. Doyle, East Prairie; Candidates for Board of Pharmacy, Dr. Otto F. Claus, St. Louis; Pharmaceutical Assay Processes, F. H. Fricke, St. Louis; Delegation to A. Ph. A., Charles E. Zinn, Kansas City; Historian, Leo Suppan, St. Louis.

Papers as follows were read and discussed:

1. French Folk Medicine, by J. F. Llewellyn.
2. Can We Improve the Missouri Pharmaceutical Association?, by Dr. H. M. Whelpley.
3. Future for Retail Pharmacists, by O. J. Cloughly.
4. Timely Topics, by Dr. H. M. Whelpley.
5. Odd Prescriptions (illustrated with specimens and methods of filling unusual prescriptions), by Professor D. V. Whitney.
6. Missouri Prehistoric Mortars and Pestles (illustrated with several specimens), by Dr. H. M. Whelpley.
7. Compilation of Poisons Employed; taken from "St. Louis Coroner's Records"—from 1904 to 1913, by Professor Francis Hemm.
8. The Missouri Pharmaceutical Association 1889 Meeting, by Dr. H. M. Whelpley.
9. Some Preparations of the U. S. P., by H. D. Llewellyn.
10. The Missouri Pharmaceutical Travelers' Association, by Dr. H. M. Whelpley.
11. Bacterial Vaccines, Sera and Phylacogens, by John B. Wood.

<>

PENNSYLVANIA PHARMACEUTICAL ASSOCIATION.

The adoption of a draft of a proposed anti-narcotic law and the recommendation to the incoming Committee on Legislation that it prepare drafts of a heroin and an itinerant vender's bill, featured the action of the Pennsylvania Pharmaceutical Association which held its thirty-seventh annual meeting at Buena Vista Spring, Franklin County, Pa., June 23, 24 and 25. From the standpoint of action taken; of the value of the papers read and discussed and of the enjoyable entertainment features, the meeting was one of the most successful ever held by the Association. The attendance was slightly below normal, but the reports of committees and officers indicated that the past year had been a particularly successful one.

This was particularly true from the standpoint of membership, for Chairman William H. Knoepfel of the Committee on Membership announced that 130 names had been added to the list at the low cost of $18. In 1911, it cost $780 to secure 428 members; in 1912, the cost was $450 to get 149 members, and in the following year, 38 members were added at no cost other than postage. The loss by death last year was 16 and by resignation and non-payment of dues, 28 .

The need of a heroin law was emphasized when members of the Pennsylvania Pharmaceutical Examining Board declared that the sale of this drug in the stores of Pennsylvania was growing to an alarming degree with the corresponding decrease in the sales of cocaine, due to stringent State and Federal legislation. The Committee on Legislation brought in a recommendation that an amendment, taking care of heroin, be made to the Cocaine Law. But it was subsequently decided to frame a separate law on heroin, putting heroin in the same class with cocaine. At present, this drug is classed as a poison and can be sold when the sale is registered. Under the proposed law, it can be sold only on the prescription of a physician, such prescription not to be renewed.

In a most comprehensive report, Chairman Charles E. Vanderkleed of the Committee on Drug Market stated that the character of the drugs and chemicals submitted for sale in Pennsylvania during the past year were a great improvement over those of previous years, and that cases of adulteration were very scarce. He proved these statements by statistics gathered among pharmacists and chemists throughout the State.

The Association endorsed the provisions of H. R. Bill 13,305, known as the Stevens Bill, and elected Caswell A. Mayo, President-elect of the American Pharmaceutical Association, an honorary member of the Association. He is a classmate of the retiring President, Richard H. Lackey, of Philadelphia. Following a recommendation by the President, the Association also went on record as approving an amendment to the Act of May 24, 1887, providing for the printing of an antidote on the label of commonly-used poisons.

The Committee on Papers and Queries, of which Mr. Fred. J. Blumenschein was Chairman, with the following associates, Prof. J. W. Sturmer, P. Henry Utech, Mrs. Bertha L. DeG. Peacock, and Prof. E. Fullerton Cook, isued the following comprehensive list of subjects for papers to be read before the meetings:—

LIST OF QUERIES.

1—Pharmacy in America from 1814 to 2014, views retrospective and prospective, are wanted.

2—It is said that if the principles governing the Pennsylvania Farmers' Grange were adopted by organized pharmacy improved conditions would soon prevail. An exposition of these principles is desired.

3—It is claimed that the bane of habit-forming drugs will adjust itself if new recruits are not formed. An investiga-

tion as to how habitues of narcotic drugs are produced is desired.

4—How does the laity learn the use of the newer synthetic remedies?

5—Has the pharmacist advanced his retail prices to meet the "high cost of living"?

6—What should be the wages of a college educated drug clerk?

7—Wanted: A plan for a "pure drugs" advertising campaign to be conducted by county or state associations.

8—Wanted: A plan for a co-operative analytical laboratory.

9—Is it ethical to ask physicians to send their patients to lunch-counter drug stores to have prescriptions compounded? Would you go to a restaurant for a remedial agent?

10—Can pharmacists do anything to bring about the teaching of pharmacy and chemistry in medical schools?

11—Wanted: The best method for obtaining new members.

12—Is the stock of expensive chemicals required to conduct a general prescription business warranted through profit or advertising?

13—What percentage of profit in advance should be figured on the cost price of expensive ingredients in a prescription ordered in unusual quantities?

14—Do pharmacists as a rule dispense U. S. P. lime water?

15—Magma Magnesiæ: The manipulation of the N. F. process is somewhat tedious. What has been your experience with it?

18—Papers dealing with the prescription nomenclatures of different nationalities are wanted.

19—Since the registration of some "poisons" is compulsory, would it be advisable to curtail the sale of small quantities of such articles?

20—What is your definition of a poison?

21—Is there any particular advantage in using pepsin of higher proteolytic power for making the various official preparations?

22—What is your best selling "own make" preparation? Will you give the working formula and method of procedure?

23—Describe any special window display which you have made and which has proven a trade winner.

24—Can you suggest any method for improving either process or product of any U. S. P. or N. F. formula?

25—How many hours per day and how many hours per week would appear proper for a registered pharmacist to be employed?

26—Does the state law which prohibits the sale of cigarettes to minors also include the sale of medicated or tobaccoless cigarettes?

27—What is your experience as agents with the so-called "proprietary" lines of non-secret remedies? Is there any advantage in selling your own goods?

28—Have you a legal right to sell a "poison" to a minor? Who is responsible in the event of accidental use of such poison?

29—Is it good practice to pour into the bottle of a customer more of a substance which may already be in it, even though it bears your label?

30—What has been your experience with the Salol coating of pills?

31—Glutoid capsules: Their use and methods of preparation.

32—Is there any real objection to filtering Brown Mixture? Does filtering remove any valuable constituent?

33—Is there any objection to replacing Solution of Potassium Arsenite with Solution of Arsenic Chloride when the former is prescribed with Syrup of Ferrous Iodide or Tincture of Ferric Chloride?

34—Prescriptions; Attractive packages; Delivery; At what rate do you figure the cost of service in compounding?

35—Should the pharmacist tell customers the nature of the "Fakes" which are advertised to the public through reading notices in the newspapers as bona fide drugs?

36—To what extent can the pharmacists of this state compel the enforcement of the "Truth Advertising Law"? In what way are you aiding the police officials to rid your community of those stores that make a business of selling habit-forming drugs?

37—Can you afford to permit a high-salaried prescriptionist to dispense soda water? Can you expect the public to believe the man is a trained pharmacist if they see him cleaning windows, mopping floors, etc.?

38—Cameras and Supplies. Their value as trade builders.

39—To what extend do pharmacists keep their drugs and chemicals in proper containers?

40—Sodium Beta-Naphtholate. Literature regarding toxicity and antiseptic properties is wanted.

41—Salable toilet articles and household remedies.

42—Is it logical and is it wise for Pennsylvania Colleges of Pharmacy to reduce "the four-year practical experience requirement" for graduation in case of students who have completed a four-year high-school course?

43—Should our pharmacy law embody a clause requiring the registration of pharmacy apprentices?

44—What evils may be expected when the latitude permitted by the "Variation Clause" of the Pure Food and Drugs Act is understood?

45—From the standpoint of the manufacturer, why should the "Variation Clause" permit variation, only in case a drug is not inferior to the official standard?

46—To what extent is Essence of Ginger sold in general stores, especially local option districts? Why should we not have a law prohibiting the sale of Essence of Ginger except on prescription?

47—Ownership of pharmacies by wholesalers. Who is most to blame for this?

48—Co-operation or competition. Which is best?

49—Stopping leaks in business.

50—The retail pharmacist and the traveling salesman. The retail pharmacist and the country newspaper.

51—The physician, the pharmacist and proprietary medicines.

52—The pharmacist versus legislation.

53—Does it pay country druggists to solicit business of dispensing physicians?

54—Is the prescribing of synthetics increasing or decreasing? Why?

55—To what extent is a preceptor under obligations to instruct his employes in practical pharmacy?

56—What benefit do you derive from belonging to and attending the annual meetings of the A. Ph. A.?

57—Outline the system you use in taking care of credit business.

58—Business plans I have successfully used.

59—The comical side of a serious business.

60—It has been proposed by a faction in the American Conference of Pharmaceutical Faculties to raise the pharmacy entrance requirements from one year of high-school work to two years. Is such a change desirable in Pennsylvania at this time?

61—Lloyd's Reagent; Fullers Earth; Kaolin: Behavior toward alkaloids.

The election of officers resulted as follows: President, Edgar F. Heffner, Lock Haven; First Vice-President, J. C. Peacock, Philadelphia; Second Vice-President, F. M. Siggins, Meadville; Secretary, David J. Reese, Philadelphia; Assistant Secretary, Lewis H. Davis, Philadelphia; Treasurer, F. H. E. Gleim, Lebanon; to the Executive Committee, Frank P. Streeper, Philadelphia; Local Secretary for the 1915 meeting, Louis Frank, Wilkes-Barre. It was decided to hold the 1915 meeting at Forest Park, Pike County, June 22, 23 and 24.

<>

HONORARY DOCTORS OF PHARMACY.

In appreciation of invaluable services, unselfishly rendered in the interest of their Institution, or in recognition of highly meritorious work contributed for the advancement of Pharmacy and Allied Science and in acknowledgment of fruitful efforts directed toward the betterment of general education, the Board of Trustees of the University of the State of New Jersey have conferred the Honorary Degree of Doctor of Pharmacy, Phar. D. Honoris Causa, upon the following men, well known in the field of pharmacy and medicine:

Joseph P. Remington, Ph. M.
George M. Beringer, Ph. M.
Joseph Koppel, M. D.
Otto Raubenheimer, Ph. G.
Leon J. Lascoff.
Jacob Gutman, M. D.

<>

The Pharmacist and the Law

WRITTEN CONTRACT FOR SODA FOUNTAIN—VARIANCE BY ORAL AGREEMENT.

In an action for the balance due on a soda fountain sold by the plaintiff to the defendant, the latter offered to prove by the plaintiff's agent and by the defendant, that coolers were to be installed in the cooler boxes, which coolers were to be of a given capacity made known to the plaintiff's manager and draftsman in Philadelphia at the time the contract was drawn. The defendant also offered testimony to show that there was to be installed a soda water apparatus capable of furnishing cool soda. The trial court refused both of these offers. It found that the defendant purchased the fountain, that it was installed in his place of business, that $530 was paid on account, that the plaintiffs made an allowance of $41.50, leaving a balance of $563.50, that the orders signed by the defendant, together with the plan and letter of acceptance, constituted a complete contract which bound the defendant, and that no oral testimony could be admitted as to the capacity and installation of coolers. This was affirmed on appeal.

The contract between the parties was in writing; that is, the defendant signed an order and approved the plan, and the order was accepted by the plaintiff. The order was directed to the plaintiff, and requested the delivery of the "following described soda water apparatus and appurtenances," and then followed a description of the structure,

with a note that, if it was for counter service, then there were to be additional details. These details appeared in the order under the title "counter service details," in which the following appeared: "One cooler box, no coolers with milk pump and 1-3 gal. can in centre, surrounded by four crushed fruit jars, as per plan." It was not denied that the defendant furnished all that he was required to do according to the writing, but the defendant argued that the contract was incomplete, and that he was entitled to offer oral testimony to show what was required to complete it. It was held that the contract, as written, was complete. The defendant might have expected more, and he might, during the negotiations, have contracted for more, but, when the contract was put in writing, that expressed the result of the negotiations, and oral testimony was not admissible to vary its terms.

Green v. Watts, New Jersey Supreme Court, 90 Atl. 667.

<>

CASH COUPONS—ILLEGAL CONTRACTS.

An offer by the proprietor of a drug store to give a piano at the end of a designated period to any person who shall present to him the largest amount of cash coupons, representing purchases from the drug store, is equivalent to maintaining a lottery; and if the druggist purchased the piano from a dealer who agrees to furnish the literature and advertising necessary to carry out the scheme, such dealer cannot recover the price of the piano and the advertising, inasmuch as it was an illegal contract and therefore not enforceable.

Main v. Mackey, 39 Pa. Co. Ct., 589.

<>

CONSTRUCTION OF EMPLOYER'S LIABILITY POLICY.

A drug company employer's liability policy, stated that the premium of $113.90, placed therein, was based or estimated upon data furnished in the schedule as to the amount of compensation paid employés, and, further, that the premium should be subject to adjustment if the compensation was greater or less than the estimated sum stated in the schedule. The compensation paid, was in fact greater than the amount so estimated. It was held that the $113.90, the amount estimated, was not conclusive of the amount of the premium, and the insurer could recover the additional amount shown to be due.

Fidelity & Casualty Co. of New York v. J. W. Crowdus Drug Co., Texas Civil Appeals, 166 S. W. 1186.

<>

INTOXICATING LIQUORS—VALIDITY OF DRUGGIST'S LICENSE—TRANSPORTATION.

A civil action was brought by a regularly licensed druggist and pharmacist in North Carolina against an express company to recover a statutory penalty for non-delivery of goods. The plaintiff also held a license from the sheriff of the county as a retail liquor dealer. He ordered six quarts of cognac brandy from a firm in Tennessee and paid charges thereon, but delivery was refused by the express company. The plaintiff alleged that it was his purpose to sell the brandy for profit, but only in the way of filling prescriptions in the *bona fide* pursuit of his calling, and this was well known to the defendant's agent. It appeared that the plaintiff had not applied for his license to sell liquor to the board of aldermen of the town in which he did business, nor to the county commissioners, as required by the North Carolina statute, but had merely gone to the sheriff for his privilege license tax, and the sheriff had given him the license. The exception in the statute permitting the sale of intoxicating liquor by pharmacists on physicians' certificates, as an exception to the public policy of the state forbidding its manufacture and sale, does not, by the express terms of the provision, relieve druggists from complying with the law as to license and taxes. The plaintiff's license was therefore held to be invalid. As a sale of liquor by him would have been unlawful, it was held that the court would not aid him in this intended breach of the criminal law, nor penalize one who, knowing the facts, declined to deliver the liquor, in furtherance of his unlawful purpose.

Smith v. Southern Express Co., North Carolina Supreme Court, 82 S. E. 16.

<>

DISTINCTION BETWEEN "SURETY" AND "GUARANTOR."

An agency contract to sell medicines and extracts within fixed territory required the agent to canvass the territory, keep a record of all goods sold, and to make reports of

sales and collections and of all goods on hand, and to pay wholesale prices, and at the termination of the agreement to pay the whole amount remaining unpaid and return the goods on hand. A separate instrument recited that the undersigned jointly and severally guaranteed the payment of a specified sum for medicines, extracts, etc., in the manner provided for in the contract. This instrument was signed by two obligors at a place indicated by the words "Sureties sign here," and an added statement read: "The above-mentioned sureties will be furnished, upon request, at any time, a statement of the amount due the company, from the party of the second part." In an action against the agent and the two signers of the instrument it was held that the instrument created only a guaranty, and the signers were not sureties.

Contracts of suretyship and of guaranty have much in common—in both the undertaking is to answer for the debt, default, or miscarriage of another. The difference is that a surety insures the debt, is bound with his principal as an original promisor, is a debtor from the beginning; a guarantor answers for the debtor's solvency, must make good the consequences of his principal's failure to pay or perform, is bound only in case his principal is unable to pay or perform. From this difference, one consequence of importance in respect of the procedure to be followed in the enforcement of liability results. A principal and a surety, being equally bound, may be joined in the same suit; but a guarantor, being bound by a separate contract, must be sued separately. Judgment for the guarantors was therefore affirmed.

J. R. Watkins Medical Co. v. Lovelady, Alabama Supreme Court, 65 So. 52.

<>

SALE OF DRUGS REGULATED.

The Massachusetts Legislature passed an act, which goes into effect January 1, making the sale of opium, morphine and other narcotic drugs unlawful, except when there is a written prescription or order. The new law requires that the prescription must be retained on file by the druggist filling it for at least two years and shall be open at all times to inspection by the State Board of Health, the Board of Registration in Pharmacy and the police. It shall not be refilled except upon the order of the prescriber. The act does not apply to prescriptions or remedies containing a small stated amount of the drugs. Violation of the act is punishable by a fine of from $50 to $1000, imprisonment for not more than one year or both.

PORT COCKBURN TRIP.

We are informed by Mr. C. C. Williams, the General Passenger Agent of the C. R. R., that the itinerary of the trip to Port Cockburn, published in the last issue of the JOURNAL, has been changed since it was furnished the JOURNAL.

It would be advisable, therefore, for members intending to take this trip to note this, and to inform themselves, by consultation with the Canadian Pacific Railway Company, No. 7, Fort Street West, Detroit, as to the time of the departure of trains and connections therewith.

Council Business

COUNCIL LETTER No. 27.

PHILADELPHIA, PA., July 1, 1914.

To the Members of the Council:

In the previous Council Letter, two motions Nos. 40 were presented, the second number (p. 68) (*Assignment of Patent Rights for Improved Package for Antiseptic Poisons*) was a typographical error and should have been No. 41. Please correct.

Motion No. 40 (*C. L. No.* 26, *p.* 67), on appropriation of $50 or less to Section on Pharmacopœias and Formularies, has received a majority of affirmative votes.

The following communication has been received from Franklin M. Apple:—

"Replying to Council Letter No. 26, I wish to record my objection to the motion numbered 40 pertaining to the Wm. S. Merrell Chemical Company's offer to the Association.

"The offer made by the Wm. S. Merrell Chemical Company *is not* identical with the one previously made by The Norwich Pharmacal Company, as a careful reading of the two offers will reveal.

"In Council Letter No. 12, p. 29, will be found the following conditions pertaining to the offer of The Norwich Pharmacal Company: 'This we propose ——— Serial No. 801,748 *and we hereby agree to bear all expense incident to the prosecution and securing of said patent,*' and on page 31 of the same letter will be found a copy of a letter from their attorneys in Washington, D. C.,

which verifies their (The Norwich Pharmacal Company's) offer to deliver a valid patent to the Association without any cost whatsoever to the Association.

"The offer of the Wm. S. Merrell Chemical Company *is not* accompanied by any such provision to tender to the Association a valid patent; but it offers merely whatsoever rights they may have in the case, which up to this date have not been determined by anyone to my knowledge. Under such conditions, the Association would be compelled to engage an attorney and ask the assistance of the Wm. S. Merrell Chemical Company to prove that the claims set forth in the application are based upon facts that leave no doubt as to the value of the invention.

"One party agrees to deliver a finished product, but the other party offers to deliver a product only partially completed—to what extent cannot be accurately determined by the evidence offered.

"As I see the facts, President Beringer has correctly voiced the further objections to the offer of the Wm. S. Merrell Chemical Company in Council Letter No. 24, p. 63 and 64.

"Concerning the suggestions made by Harry B. Mason in Council Letter No. 20, I wish to state that I endorse the following ones without reserve: Nos. 1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 13 and 14. I would modify No. 5 so that a brief synopsis of the committee reports be presented to the Council for its consideration and if deemed wise by it, referred to the Association for discussion. Before adopting No. 12, provision must be made to protect the material offered for the benefit of the Journal of the A. Ph. A. No. 15 is a very radical move and should be given very serious attention before its adoption. This proposed move indicates the necessity of using very great care in selecting presiding officers for the several sections. It might be well to have an Advisory Board, chosen by the Council, to censor the nominees for presiding officers of the several sections in the general interest of the Association. I most heartily endorse the idea of abolishing the Section on Pharmacopœias and Formularies, as its work comes under the scope of the Committee on Practical Pharmacy and Dispensing mostly, hence you very materially weaken this Section, which is most unfortunate indeed. The only advantage gained by its existence is the fact that a member *not* actively engaged in the retail drug business is eligible to hold office, whereas it is obligatory that he be so engaged to preside over the destinies of the Section on Practical Pharmacy and Dispensing.

"Until it is proven that another Section can properly look after the questions that now are the property of the Committee on Commercial Interests, I am opposed to the discontinuing of the oldest section of the Association. It was established in 1887, when the Association was only twenty-five years old, and has continued to prove to be a vital part of the Association's activities. It is needed more today than at any previous day, and all that is needed is proper supervision and direction. The bread and butter line is too prominent a part in the life of the majority of our members to be treated lightly. What is demanded today is the possibility of *practically applying* one's knowledge to gain an honorable living, and provide for the proverbial rainy day."

The following letter has been received from President G. M. Beringer:—

"From the letter of Prof. Koch (Letter No. 26, pages 67-68), I fear that he has mistaken my position. His communication in no wise answers the arguments advanced by me in Council Letter No. 24. I am not averse to the acceptance of any proposition of this character for the protection of the public by additional safeguards in the handling of poisons. To the contrary, I am ready to vote in favor of the acceptance of these propositions, provided they are not coupled with conditions that would be unwise for the Association to accept.

"If the members will kindly peruse the letter of the Norwich Pharmacal Company (Letter No. 12, page 30) and the letter of the William S. Merrell Chemical Company (Letter No. 21, page 53), they should not fail to understand my point. The first is a generous offer to transfer all right and title to the American Pharmaceutical Association without any expense to the Association, with no condition attached except the right on the part of the assignee to continue manufacturing these tablets. The latter proposition contained two conditions, which as pointed out in my previous communication, may prove burdensome and objectionable.

"The form of the assignment is not what I have directed attention to, but the letter accompanying such assignment which, doubtless, is intended by the William S. Merrell Chemical Company as a part of their offer and contract and should be so considered by the Council. The wording of the motion submitted by Drs. Beal and Koch in the first resolution refers to their communication and undoubtedly covers the conditions named therein.

"In order to get the matter squarely before the Council, I will move that paragraph *one* of the motion be amended to read:

"'Resolved, That the American Pharmaceutical Association accept the completed assignment of the patent rights of the William S. Merrell Chemical Company in and to a design patent for a new, original and useful improvement in packages for Antiseptic Poisons, serial number 817,364, provided such patent and assignment is completed without expense to the Association or associated with any other conditions than that named in the assignment.'"

Do you approve above motion, which will include approval of the original motion as

amended and as a whole, and will be regarded as *Motion No. 42 (Amended Motion for Assignment of Patent Rights or Improved Package for Antiseptic Poisons)*.

The following communication has been received from Hugh Craig:—

"I am particularly impressed with Mr. Wilbert's communication and I believe that for the most part his suggestions are good ones, because there is a real and growing necessity for some change in the procedure of the Association, to obviate a great deal of wasting of time and to coordinate the interests of the various sections. While Mr. Wilbert suggests a great many simultaneous sessions, I believe that this matter could be adjusted each year quite satisfactorily. It might be a little out of place for me to comment particularly upon his suggestion for the elimination of the Section on Commercial Interests because of my connection with an organization which really covers the ground that this section is designed to cover. Pharmacally considered, the commercial side of the calling of the druggists should have the limitations that Mr. Wilbert specifies and within the limitations it could quite well be handled in the Section on Practical Pharmacy.

"I particularly favor, however, his suggestion to eliminate the Section on Pharmacopœias and Formularies. This has always seemed to me an unnecessary subdivision. Considered from the standpoint of legal standards, the Pharmacopœia and the National Formulary would come within the purview of the Section on Education and Legislation and they really have no other place. From the standpoint of pharmacal practice embracing processes and formulas, all books having to do with the preparation of drugs would come most naturally within the purview of the Section on Practical Pharmacy and nowhere else. Of course, I recognize that this might have a tendency to crowd unduly the program of the two sections to which the work would be allotted, but I believe that this crowding can be guarded against, if the chairmen of the sections will but refrain from perhaps a commendable desire to have a great many papers rather than a few papers on timely topics and permit an opportunity for discussion on the floor.

"The matter of the standing of the so-called Women's Section, was one upon which my position is quite well known from the effort I made to have at least the name of this subdivision changed at the Nashville convention. Mr. Wilbert states what are uncontrovertible facts with reference to the constitutional standing of such a division of the Association and heartened by his suggestion I desire at this time to offer the following motion:

"'*Resolved*, That the name of the subdivision of the American Pharmaceutical Association now known as the Women's Section be changed to the Women's Auxiliary, and that all matters of constitution and by-laws of this Auxiliary be left to the determination of those who shall constitute it, with the provision that membership in the Auxiliary be limited to the women members of the Association and to the women members of the immediate family of all members of the Association.'

"I do not agree with Mr. Wilbert with reference to the abolition of the House of Delegates, as I believe this body performs a very necessary service as a clearing house under present conditions. I think, however, that it would be much better, if provision was made for having the Council meet as a committee on resolutions—to use a popular term—and perform the work now carried out by the House of Delegates. In order that delegates might secure proper recognition my suggestion would embody a plan for having them certified to the Council and allowing them full voice on the floor of the meeting, which I have suggested, this meeting not to have any voting, the disposition of the various matters being left to the Council.

"In another matter I do not agree with Mr. Wilbert, and that is, in his suggestion that alternates be recognized by the Council to represent absent members. The business of the Council is continuous throughout the year and for this reason an alternate could not be expected to be in touch with the status of various matters that perhaps had previously come before the Council. It is, however, greatly to be desired that there be at each annual convention the fullest possible attendance of the members of the Council and this desirability should be urged upon each member of the body on every possible occasion."

Do you approve of motion as above offered? It will be known as *Motion No. 43 (In Women's Section, A. Ph. A.)*

The following communication has been received from Frederick J. Wulling:—

"Council Letter No. 26 at hand. Mr. Wilbert's letter includes some of my oft-times expressed sentiments. I believe the multiplication of sections was unwise. The sections on commercial interests, history, pharmacopoeias and formularies could be made standing committees of other sections or of the Association, with definite periods of time and places on the program for their reports. The sessions of the three sections ought to be held concurrently to save time. A very much greater number of members read the proceedings than attend the sessions. Indeed, I venture to say most members get more out of reading the proceedings than out of listening to them.

"In the general and section sessions, especially in the latter, too much time is wasted because not enough time and care is devoted to the preparation of the programs. The reading and discussion of papers should be

based on a time schedule, carefully prepared beforehand by the chairmen, who, in the absence of the fullest cooperation on part of the participants in the program, should arbitrarily set limits to papers and their discussions and then adhere as strictly to the time schedule as a train dispatcher does to his. That kind of work and courage on part of the chairmen and cooperation on part of participants would unquestionably be appreciated by practically everyone. We have tested this out here in Minnesota, where for the past ten years the Scientific Section of the State Association has been conducted on a time schedule with never a minute's deviation and to everybody's satisfaction and profit. Under this system every participant is held to the point and gabfests are simply impossible, all with the result that an astonishingly large amount of really meaty transactions can be conducted in a session of average length. The sessions, especially of the sections, should not constitute the evolution of a program, but *the presentation of an already evolved program.* The elimination of non-essentials would save an amount of time that would astonish many.

"With this kind of management the Association would need not more than three days and the other two Associations one day each. If these three bodies should hold their meetings quasi-concurrently, as I think they should, the A. Ph. A. could meet on Mondays, Wednesdays and Fridays and the other two bodies on Tuesdays and Thursdays with one session each, each day.

"Mr. Wilbert's suggestion of alternates for members of the Council who are unable to attend the meeting should receive consideration. The members unable to attend should have the designation of the alternates. Possibly it should be the duty as well as the power of each Council member to so designate.

"As I see the matter, there is no warrant for a Women's Section. There would be no objection to a non-official Women's Auxiliary.

"I believe, too, that we ought to hold our meetings in the winter time or other than the summer time and that the meetings ought to be devoted more seriously and exclusively to the business of the Association. Now we hold our meetings during the holiday period of the year and transact our business with the holiday spirit and mood on us. Those who care to combine a holiday with the meetings could do so as well in winter. The time ought to be past when pharmacists must be induced to attend meetings by the promise of a good time."

The following communication has been received from Albert Schneider:—

In reference to Mr. Mason's letter of May 16th I would urge most careful consideration. Let us make haste slowly in this matter. The A. Ph. A. has done most excellent work in the past and it has a most excellent reputation. I agree with Mr. Mason that certain changes in the manner of conducting the annual meetings of the Association are very necessary, but I for one would not think it wise to cut out any of the sections. I believe the objectionable features referred to by Mr. Mason can be corrected by certain rearrangements of the section work. To this end I hereby submit the following. Establish four sections, each section with four, or more, divisions, as follows:

I. COMMERCIAL SECTION—
   1. Division of Foreign and Domestic Drug Market
   2. Division of Advertising
   3. Division of Manufacture
   4. Division of Retail Drug Trade

II. LABORATORY SECTION—
   1. Division of Chemistry
   2. Division of Botany and Pharmacognosy
   3. Division of Materia Medica and Pharmacology
   4. Division of Bacteriology and Sanitation

III. SECTION ON PHARMACY AND DISPENSING—
   1. Division of U. S. P. and N. F.
   2. Division of Dispensing
   3. Division of Retail Manufacture
   4. Division of Historical Pharmacy

IV. SECTION ON EDUCATION AND LEGISLATION—
   1. Division of Colleges of Pharmacy
   2. Division of State Legislation
   3. Division of National Legislation
   4. Division of Boards of Pharmacy

I have purposely mixed the different interests as represented by the main divisions or sections, so as not to be accused of showing partiality. The four sections cover drug trade, investigation and research, pharmaceutical methods and education, in fact the entire field of legitimate pharmaceutic interest. Each section should have full control of the subdivisions. It is my idea that there should not be separate meetings for the section divisions, but that such divisions as may be represented by readers of papers, are to meet with the rest of the divisions of such section, at one and the same session.

The above are suggestions which are quite self-explanatory. I believe if they were adopted they would overcome the confusion referred to by Mr. Mason without abandoning any of the sections now in existence. Under the proposed plan, the Conference of Faculties and the Association of Boards could be made Divisions of Section II; or they could continue as before provided that none of their meetings interfere with the work of the A. Ph. A."

Motion No. 44 (Applications for Membership). You are requested to vote on the following applications for membership:—

No. 197. Walter Hines Whisenant, 117 E.

Houston St., San Antonio, Texas, rec. by Herman A. Nester and E. G. Eberle.

No. 198. Robert T. Chambers, 529 San Pedro Ave., San Antonio, Texas, rec. by Herman A. Nester and E. G. Eberle.

No. 199. John W. Callens, 201 De Leard St., Monroe, La., rec. by Philip Asher and J. H. Beal.

No. 200. Emile Joseph Burvant, 2308 Laharpe St., New Orleans, La., rec. by Philip Asher and J. H. Beal.

No. 201. Charles Friedgen, 1220 Amsterdam Ave., New York, N. Y., rec. by Louis Berger and Leon Lascoff.

No. 202. James H. Jones, 350 E. Fordham Road, New York, N. Y., rec. by Louis Berger and J. Leon Lascoff.

No. 203. George Waterman Smith, Honolulu, Territory Hawaii, rec. by Frank L. Gibson and J. H. Beal.

No. 204. Louis Frank Thumser, 232 Monticello Ave., Jersey City. N. J., rec. by Wm. C Anderson and Jacob Rehfuss.

No. 205. Ernest Reif, 1251 North Second St., Philadelphia, Pa., rec. by A. J. Staudt and Franklin M. Apple.

No. 206. Frank Randall Rohrman, 4603 Wayne Ave., Philadelphia, Pa., rec. by Franklin M. Apple and George M. Beringer.

No. 207. Virgil Earl Pirtle, Bonne Terre, Mo., rec. by H. M. Whelpley and J. W. Mackelden.

No. 208. Junius Blanton Linn, Canton, Mo., rec. by H. M. Whelpley and Francis Hemm.

No. 209. D. W. Casey, Red Oak, Iowa, rec. by E. O. Kagy and R. L. Parker

No. 210. Longin Tabenski, Ph. G., M. D., 1725 W. 18th St., Chicago, Ill., rec. by S. K. Sass and Leo. L. Inrazek.

No. 211. Clarence Van Buren Nichols, 408 E. Main St., Anadarko, Okla., rec. by J. H. Beal and J. W. England

No 212. Frank Edward Bradley, Noble, Oklahoma, rec. by J. H. Beal and J. W. England.

No. 213. Ralph Preston Hron, 1 Highland Circle, Guthrie, Okla., rec. by J. H. Beal and J. W. England.

No. 214. Abdel Wm. Kiler, 2470 Summit St., Columbus, Ohio, rec. by Ernest C. Marshall and Anna G. Bagley.

No. 215. Jacob Maurice Bloch, 17 Poplar St., Richmond Hill, Long Island, New York, rec. by Otto Raubenheimer and J. Leon Lascoff.

No. 216. Herman Cohen, Phar. D., 69 Worrell St., Brooklyn, N. Y., rec. by Otto Raubenheimer and J. Leon Lascoff.

No. 217. John Deuble, Phar. D., 105 Sherman Ave., Jersey City Heights, N. J., rec. by Otto Raubenheimer and J. Leon Lascoff.

No. 218. Meyer A. Feinberg, Phar. D., 259 East Broadway, New York, N. Y., rec. by Otto Raubenheimer and J. Leon Lascoff.

No. 219. Luke Carleton Hines, Phar. D., 216 Washington St., Jersey City, N. J., rec. by Otto Raubenheimer and J. Leon Lascoff.

No. 220. Morris L. Klar, Ph. G., 25 Delancey St., New York, N. Y., rec. by Otto Raubenheimer and J. Leon Lascoff.

No. 221. Elias Liebmann, Phar. D., 308 E. 57th St., New York, N. Y., rec. by Otto Raubenheimer and J. Leon Lascoff.

No. 222. Abraham N. Miller, Phar. D., 306 East 165th St., New York, N. Y., rec. by Otto Raubenheimer and J. Leon Lascoff.

No. 223. Herman Harrison Oxman, Ph. G., 14 West 118th St., New York, N Y., rec. by Otto Raubenheimer and J. Leon Lascoff.

No. 224. Saul M. Robinson, Phar. D., 640 Broadway, Brooklyn, N. Y, rec by Otto Raubenheimer and J. Leon Lascoff.

No. 225. Carl L. Braun, 24 North High St., Columbus, Ohio, rec. by Edward N. Webb and Ernest C. Marshall.

No. 226. Edward L. Joyce, Sergt. 1st Class, Hospital Corps, U. S. Army, Philippine Islands, Corregidor, rec. by James R. Merryman and George H. Paul.

No. 227. Narciso Rabell Cabrero, Aquadilla St., San Sebastian, P. I., rec. by Rafael M. Mendez and C. H. Packard.

No. 228. Joel Morgan Fletcher, Cooper, Texas, rec. by E. G. Eberle and C. A. Duncan.

No. 229. Solomon Greenbaum, 219 East 7th St., New York, N. Y., rec. by Wm. C. Anderson and Joseph L. Mayer.

No. 230. Harry A. Read, 529 Dean St., Brooklyn, N. Y., rec. by Wm. C. Anderson and Joseph L. Mayer.

No. 231. Robert J. Gardner, 560 Monroe St., Brooklyn, N. Y., rec. by Eugene L. Maines and Joseph L. Turner.

No. 232. J. H. Axt, 740 2d St., Ft. Madison, Iowa, rec. by Geo. H. Schafer and C. H. Packard.

No. 233. Mrs. Virginia Turner Maukin, Thurmond, W. Va., rec. by Walter E. Dittmeyer and G. I. Young.

No. 234. Charles L. McIntire, Perry St., St. Marys, Ohio, rec. by P. J. Ackerman and Edward Spease.

No. 235. Oscar O. Rinker, 230 E. Russell St., Columbus, Ohio, rec. by P. J. Ackerman and Edward Spease.

No. 236. Geo. T. Lehman, 2032 N. 4th St., Columbus, Ohio, rec. by P. J. Ackerman and Edward Spease.

No. 237. Chester W. McClintock, 64 Woodruff Ave., Columbus, Ohio, rec. by Edward Spease and C. A. Dye.

No. 238. Cyrus Homer Young, 2361 N. High St., Columbus, O., rec. by Edward Spease and Clair A. Dye.

No. 239. Fred A. Powell, 430 N. Court St., Circleville, Ohio, rec. by Edward Spease and Clair A. Dye.

No. 240. Jacob L. Wagner, 205 West 11th Ave., Columbus, Ohio, rec. by Clair A. Dye and Edward Spease.

No. 241. Albert R. Will, 205 West 11th Ave., Columbus, Ohio, rec. by Edward Spease and Clair A. Dye.

No. 242. Alva O. Harris, 531 Carpenter St., Columbus, Ohio, rec. by Edward Spease and Clair A. Dye.

No. 243. Paul Lorrain Goodale, 1227 Pendleton Ave., St. Louis, Mo., rec. by H. M. Whelpley and J. C. Falk.

No. 244. Albert Rheinhart Paar, 51 W. Frambes Ave., Columbus, Ohio, rec. by C. A. Dye and Edward Spease.

No. 245. Lawrence Atkinson, Holly, Mich., rec. by A. H. Dewey and W. F. Gidley.

No. 246. Jesse G. Porter, Booneville, Ind., rec. by A. H. Dewey and W. F. Gidley.

No. 247. Homer Eberhard, Columbia City, Ind., rec. by A. H. Dewey and W. F. Gidley.

No. 248. John I. Groom, West LaFayette, Ind., rec. by A. H. Dewey and W. F. Gidley.

No. 249. John H. Grant, Jacksboro, Tenn., rec. by F. W. Ward and R. L. Crowe.

No. 250. Dell Wallace Youngken, 2500 Jefferson St., Philadelphia, Pa., rec. by J. W. Sturmer and Robert Fischelis.

No. 251. Charles A. Forbrich, 3752 S. Kedzie Ave., Chicago, Ill., rec. by J. H. Beal and J. W. England.

No. 252. D. Brice Adams, Warren, Ind., rec. by Wm. H. Hickerson and Frank Henry Carter.

No. 253. M. L. Barrett, 233 W. Lake St., Chicago, Ill., rec. by J. H. Beal and J. W. England

No. 254. Alvin Chester Webb, 6630 Germantown Ave., Philadelphia, Pa., rec. by Charles H. LaWall and M. R. LaWall.

No. 255. Stephen Disbrow Woolley, 43 Main Ave., Ocean Grove, N. J., rec. by Geo. M. Beringer and George M. Beringer, Jr.

No. 256. George Stelle Campbell, Millburn, N. J., rec. by Geo. M. Beringer and George M. Beringer, Jr.

No. 257. Albert H. Mitschele, 86 Hudson St., Hoboken, N. J., rec. by George M. Beringer and George M. Beringer, Jr.

No. 258. Harry Ernest Bischoff, 118 4th St., Union, N. J., rec. by George M. Beringer and George M. Beringer, Jr.

No. 259. Alexander Dubell, corner Main and Washington Sts., Mt. Holly, N. J., rec. by George M. Beringer and George M. Beringer, Jr.

No. 260. Walter Lewis, Regt. Hosp. 27th Infantry, Texas City, Texas, rec. by H. W. Riess and J. W. England.

No. 261. John M. Hawkins, East Prairie, Mo., rec. by Wm. Mittelback and H. M. Whelpley.

No. 262. Haydn Mozart Simmons, 757 Phelan Bldg., San Francisco, Cal., rec. by Joseph L. Lengfold and Albert Schneider.

No. 263. William Joseph Rabinowitz, 1043 S. Tinton Ave., Bronx, New York, N. Y., rec. by William C. Anderson and Joseph Caruso.

No. 264. William P. Porter, Belgrade, Montana, rec. by Charles E. Mollet and H. H. Bateman.

No. 265. Walter Harold Daniell, 40 Myrtle St., Boston, Mass., rec. by Elie H. LaPierre and William Atcheson.

No. 266. Edward Rabenstein, Jr., 4060 Superior Ave., Cleveland, Ohio, rec. by Eugene R. Selzer and J. H. Beal.

No. 267. Carl Weeks, Des Moines, Iowa, rec. by J. H. Beal and Mary L. Creighton.

No. 268. William Wilson McNeary, 1700 Mt. Vernon St., Philadelphia, Pa., rec. by Franklin M. Apple and J. W. England.

No. 269. John J. Seiberz, Shelly and Camp, Louisville, Ky., rec. by George Eisele and J. W. Gayle.

No. 270. Robert S. Berryman, Versailles, Ky., rec. by George Eisele and J. W. Gayle.

No. 271. Charles I. Albus, 743 E. Market St., Louisville, Ky., rec. by George Eisele and J. W. Gayle.

No. 272. Leon Evans, Mayfield, Ky., rec. by George Eisele and J. W. Gayle.

No. 273. W. C. Morris, Midway, Ky., rec. by George Eisele and J. W. Gayle.

No. 274. Thomas P. Averill, 206 W. Main St., Frankfort, Ky., rec. by George Eisele and J. W. Gayle.

No. 275. George Ernst Thum, 61, 3d St., Elizabeth, N. J., rec. by Henry Schmidt and George M. Beringer.

No. 276. Samuel M. Jacobson, 171 4th St., Elizabeth, N. J., rec. by George M. Beringer and George M. Beringer, Jr.

No. 277. Dr. Jose I. Berenguer, Enramadas y San Felix Farmacia "La Especial," Santiago de Cuba, Cuba, rec. by Jose G. Diaz and Jose P. Alacan.

No. 278. Alfred Harrington Snyder, 51 Prospect St., Bridgeport, Conn., rec. by Geo. A. Jamieson and John A. Leverty.

No. 279. Waldermar Guerich, 21 Ellis St., San Francisco, Cal., rec. by Fred I. Lackenbach and C. H. Packard.

No. 280. Otto W. Muehlhause, 1473 Woodall St., Baltimore, Md., rec. by James A. Black and H. A. B. Dunning.

No. 281. Hamilton Ewart Davis, Andrews, North Carolina, rec. by James D. Howard and C. H. Packard.

J. W. ENGLAND,
Secretary of the Council.

414 N. 33d St.

<>

COUNCIL LETTER No. 28.

PHILADELPHIA, PA., July 14, 1914.

To the Members of the Council:

J. W. England, Chairman of Committee on Publication, reports as follows:—

"It will be recalled by the members of the Council that Motion No. 30 (C. L. No. 17) provided that the resignation of Dr. James H. Beal as Editor and General Secretary be accepted to take effect September 1, 1914, and Motion No. 31, that Dr. Beal be relieved of the active work of the General Secretaryship and Editorship of the JOURNAL as far as possible, and that he be authorized to make the best arrangements he could with Mr. Ernest C. Marshall or other person or persons that he might select, to carry on the work of the offices of the General Secretary and Editor under his direction until September 1st.

Dr. Beal writes that Mr. Ernest C. Marshall has agreed to serve as Acting Editor and Acting General Secretary, beginning June 1, 1914, at the rate of $3000 per year from the date of his assumption of duties, and that the allowance is to be in full for all of his services, and that he is not to receive additional compensation for work done as Advertising Manager."

The following communication has been received from President George M. Beringer:—

"I have been greatly pleased to note the interest that is being taken by our members in the discussion regarding the method of procedure at the annual meetings of the Association. From the multitude of counselors, no doubt, we will be able to draw some conclusions that will materially aid the situation. The President is giving these several suggestions very careful consideration and at the proper time may offer some recommendations concerning these.

From the discussion regarding the matter of our lady friends of the Women's Section, one might imagine that the members of the Council were all confirmed bachelors. We must remember that we are living in the twentieth century when women have ideas of their own and we must, at least, consult them before taking any definite action on the questions involved.

I believe that the members of the Council will agree with me that it is not desirable to take hasty action on the motion offered by Mr. Craig, and I am likewise constrained to question whether a motion of this character, in a parliamentary sense, is in order. The status of all of our Sections and standing committees of the Association is fixed in the by-laws and not simply by a motion or resolution offered in the interim between meetings and voted upon by mail.

Further, I believe that at the forthcoming meeting, action will be taken by the Association towards fixing the status of our good lady friends, to whom we owe so much, both as to the proper title for their section or branch or auxiliary, whatever we may decide to name it, and likewise their standing as members of the Association.

Pending such proper action of the Association or its Council at Detroit, I will move that the consideration of Mr. Craig's motion, known as Motion No. 43, be postponed until the meeting of the Association in Detroit."

Do you approve of substitute motion as above presented? It will be known as *Motion* 45 (*Postponement of Action on Motion No.* 43).

Lucius E. Sayre writes as follows:—

"While I approve of the plan of condensation of sections, I do not like to see the Section on Pharmacopœias and Formularies discontinued. I know the desire of those who proposed this section and am in sympathy with their motives and purposes. Let them have a fair chance of a few years to see what they can do. They represent a young and enthusiastic element in our Association who believe in certain reforms and progress along the line of this particular work. Please read my article on the subject of this section in a paper presented at Denver. I should not object to merging the Section on Practical Pharmacy and Dispensing with this section and give it a new title, e. g., Section on Pharmacopœias, Formularies and Dispensing. This title will embrace practical pharmacy, to my notion."

C. Lewis Diehl writes as follows:—

"If the motion on the "Assignment of Patent Rights for Improved Package for Antiseptic Poisons" had been presented under the proper number, that is No. 41 instead of the duplicate number 40, I should have voted 'No,' and given my reasons for doing so—these reasons being in part on the grounds presented by Mr. Beringer, and more recently by Mr. Apple. But another reason, which is but lightly touched upon by Mr. Beringer, is, this, that while the offer of the Norwich Pharmacal Co. deals with an article which has been prominently discussed for admission into the U. S. P., the article covered by the offer of the Wm. S. Merrell Chemical Co.—aside from the fact that it is offered conditionally—is not generally known; has so far as I know, not been discussed, and certainly has not been proposed for admission into the U. S. P.

Indeed, if it had been the purpose to advertise this product, which is up to the present time exclusively controlled by its originators, the latter could have resorted to no better method than to relinquish their rights, with or without conditions, to the American Pharmaceutical Association; for, whether discussed for admission into the U. S. P., or not, the demand for this article, if any, is most likely hereafter to be for the product of the originators.

I do not approve the promiscuous ownership of patent-rights by the Association, and certainly not in any case in which it is not clearly evident that it is the only (or best) way to safe-guard the public. I am, therefore, constrained to vote in the negative on Mr. Beringer's resolution, covered by Motion No. 42."

C. Lewis Diehl, Chairman of the Committee on National Formulary, discusses the work of the revision of the N. F. IV, as follows:

"Inasmuch as it has been announced that the work of the revision of the U. S. P. IX has so far advanced that the printer can begin to set up the text in type on or about the first of this month (July), it has now become imperatively necessary to round up the revision of the N. F. IV so that it will be practically ready to go to press shortly after the Detroit meeting.

We have, since the date of the Nashville meeting, accomplished much towards this end; have revised and corrected the mimeograph copies of the text then presented, as

well as of the small number of unfinished monographs, including the chapter on sterilization; have prepared and mimeographed the text for some sixty or more articles carried over from the U. S. P. VIII, reviewed and supplemented the dosage with the assistance of Dr. Cohen, and have made substantial progress on the definition of ingredients that are required for the preparations and are not (or no longer) defined in the Pharmacopœia.

But there are some questions still in controversy, which cannot be settled except by tedious correspondence and consequent delay. It is, therefore, very desirable to arrange for a meeting of all the members of the Committee for several days' conference, so that these questions can be definitely settled and the last word said on the mimeograph proofs. Unless this is done, the responsibility on a number of important points will have to rest with the few members composing Sub-Committee "D," who are working directly with the preparation of the manuscript, and this responsibility the members of the Sub-Committee (acting as an 'Executive Committee') very properly decline to assume.

The necessity for this conference is emphatically voiced by Mr. Cook, who, as acting Chairman of Sub-Committee "D," has been indefatigable in this important service, and who, aside of being handicapped by other important duties, has very generously assumed the duties of cognately assembling the details of progress in our work, so that the Bulletin might be issued with fair regularity during a prolonged period of illness—almost continuous since October of last year—which had incapacitated me for the strenuous work involved in conducting the revision during much of that time.

For the reasons thus explained, I therefore respectfully ask your authority to issue a call for a meeting of the Committee on National Formulary for the purpose of a personal Conference during the two days succeeding the last session of the Association, at Detroit, with the usual allowance for expenses incurred by them for transportation, sleeper, meals *en-route*, and (not exceeding) two days at hotel.

Owing to the proximity of the location of many of the members to Detroit, the expense of this conference, if authorized, will be well within the appropriations for this purpose on previous occasions.

The proposed date, following the close of the last session, is suggested because some of the members—Mr. Beringer, Mr. Cook and others—will be too busy at an earlier date, and probably unable to attend, if the Conference is held before the opening session of the Association."

The Secretary of the Council wrote to Professor Diehl, as follows:—

"In re. your letter of the 6th inst., addressed to the Council, it seems to me that it would be better to appropriate a definite sum with which to pay the expenses, etc., of the fifteen members of the Committee on National Formulary for two days, and I would suggest that a motion be offered stating the maximum amount desired. All expenditures in excess of twenty-five dollars must be approved by the Finance Committee before they can be acted upon by the Council. If you will state the necessary amount, I will submit the motion to the Finance Committee, and then to the Council. But since this expenditure is to be made *after* the Council is to meet at Detroit, why not leave the matter of appropriation rest until then? In the meanwhile, the authorization of the meeting of the Committee on National Formulary can be placed before the Council."

The following reply was received from Professor Diehl:—

"My object was for authority to call a meeting of all the members of the N. F. Committee, of course at the expense of the Association. The matter of appropriation, as suggested by you, had better rest until the Council meets at Detroit. Incidentally, we will then know approximately how much will be required."

Do you authorize the issuance of a call for a meeting of the Committee on National Formulary for the purpose of a personal conference during the two days succeeding the last session of the Association at Detroit, the matter of appropriation for expenses incurred by the committeemen for transportation, sleeper, hotel expenses, etc., to be passed upon by the Council at the Detroit meeting? This will be known as *Motion No. 46 (Authorization of Special Meeting of Committee on National Formulary after Sixty-second Annual Convention of A. Ph. A.)*

J. W. ENGLAND,
Secretary of the Council.

415 N. 33d Street.

<>

COUNCIL LETTER No. 29.

Philadelphia, Ja., July 29, 1914.

To the Members of the Council:

Motions No. 39 (Organization of Columbus Branch, A. Ph. A.), No. 44 (Election of Members; applications Nos. 197 to 281 inclusive), No. 45 (Postponement of action on Motion No. 43), and *No. 46 (Authorization of Special Meeting of Committee on National Formulary after sixty-second Annual Convention of the A. Ph. A.)*, have each received a majority of affirmative votes.

George B. Kauffman, of Columbus, O., has been elected as representative to the Council by the Columbus Branch. The members of the Council now number forty.

The following communication has been received from Julius A. Koch:

"In order to answer the various objections to the acceptance of the patent right on 'Antiseptic Leaflets,' I requested The William S. Merrell Chemical Company to make their offer more specific and am enclosing their reply which kindly insert in the next Council letter. I note Prof. Diehl's remarks on the subject and wish to reply only in so far as it seems to me necessary in justification of The William S. Merrell Chemical Company. Some months ago the 'Leaflets' came to my notice and to my mind seemed to meet our needs so well that I brought them to the attention of many of my friends, both physicians and pharmacists. The favor with which the idea was received, led me to bring it to notice of the Chairman of the Revision Committee and to request The William S. Merrell Chemical Company to assign their rights to the A. Ph. A., with which request they promptly complied. I am solely responsible for bringing 'Antiseptic Leaflets' before the Council and wish to state that I have no interests in the same except as a matter of public good. I still believe this form of dispensing corrosive sublimate for making antiseptic solution to be the safest for the prevention of accident and suicide and should like to see it adapted in the U. S. Pharmacopœia. For this reason I asked The Merrell Chemical Co. to assign to the Association the patent rights."

Attached to Prof. Koch's letter is the following communication:

"THE WM. S. MERRELL CHEMICAL CO.
Home Offices and Laboratories, Cincinnati.

July 15, 1914.

Mr. J. A. Koch, Strattonville, Pa.:

Dear Sir:—Replying to your letter of the 11th instant, our intention is to turn over our right to the patent which is now being prosecuted before the commissioner and which we intend to complete and secure issuance of the patent in our name, if a patent is granted, as we believe it will be.

Our assignment was intended to turn over to the American Pharmaceutical Association our rights as stated in a previous communication. We do not of course, guarantee that we shall secure the patent but of course if we fail to do so, the product becomes public property which as we understand it, would answer your purpose nearly if not quite as well.

In specific reply let us state that it is our intention to prosecute our claims to completion. In fact, our patent attorney has not even been advised of our assignment and is continuing prosecution as if nothing of the kind had occurred.

Very truly yours,
THE WM. S. MERRELL CHEMICAL COMPANY,
CHAS. G. MERRELL."

J. W. ENGLAND,
Secretary of the Council.
415 North Thirty-third St.

Changes of Address

All changes of address of members should be sent to the General Secretary promptly.

The Association will not be responsible for non-delivery of the Annual Volume or Year Book, or of the JOURNAL unless notice of change of address is received before shipment or mailing.

Both the old and the new address should be given, thus:

HENRY MILTON,
From 2342 Albion Place, St. Louis, Mo.
To 278 Dartmouth St., Boston, Mass.

Titles or degrees to be used in publications or in the official records should be given, and names should be *plainly* written, or typewritten.

<>

DUNCAN, CHESTER A.
From Dallas Texas.
To 400 Chestnut St., Coatesville, Pa.

STANISLAUS, I. V. STANLEY.
From 1715 Cherry St., Philadelphia, Pa.
To 1214 Arch St., Philadelphia, Pa.

TYSON, L. R., PH. G.
From Cheyenne, Wyo.
To Homedale, Idaho.

GARDNER, ROBT. J.
From 560 Monroe St., Brooklyn, N. Y.
To 62 Welling St., Richmond Hill, L. I., N. Y.

BYERS, J. D.
From Manila, P. I.
To Augusta Arsenal, Augusta, Georgia.

GAHN, HENRY.
From Purveying Department, Union Bldg., Washington, D. C.
To U. S. Marine Hospital, New Orleans, Louisiana.

CLARK, LOUIS G.
From Portland, Oregon.
To Alder and West Park, Portland Oregon.

SIEGENTHALER, HARVEY N.
From 22 E. High St., Springfield, Ohio.
To 25 E. Grand Ave., Springfield, Ohio.

PFAFFLIN, HENRY A.
From 602 Illinois St., Indianapolis, Ind.
To 2729 N. Pennsylvania Ave., Indianapolis, Ind.

BRUDER, OTTO E.
From 4740 N. Spalding Ave., Chicago, Ill.
To 3525 Greenview Ave., Chicago, Ill.

UNITED STATES PUBLIC HEALTH SERVICE.

List of Changes of Stations and Duties of Commissioned and Other Officers of the United States Public Health Service, for the seven days ended June 24, 1914:—

Assistant Surgeon-General L. E. Cofer. Directed to proceed to Philadelphia, Pa., Reedy Island, and Delaware Breakwater Quarantines for the purpose of making an inspection of the operations of the quarantine service upon the Delaware River. June 16, 1914.

Assistant Surgeon-General J. W. Trask. Granted 1 day's leave of absence June 19, 1914. June 17, 1914.

Senior Surgeon H. W. Austin. Granted 10 days' leave of absence from June 25, 1914. June 24, 1914.

Surgeon George M. Magruder. Re-assigned for duty at Portland, Oregon, effective Feb. 23, 1914. June 16, 1914.

Surgeon R. M. Woodward. Detailed to attend the conference of the Pacific Coast Federation of Sex Hygiene at San Francisco, Cal., July 1, 1914. June 22, 1914.

Surgeon G. M. Guiteras. Granted 2 days' leave of absence, June 21-22, 1914. June 19, 1914.

Surgeon L. L. Lumsden. Directed to visit Baltimore and such other points in the State of Maryland as may be found necessary on business connected with the investigation of rural sanitation. June 10, 1914.

Surgeon J. F. Anderson. Detailed to attend a conference called by the licensed manufacturers of biologic products to be held at Atlantic City, N. J., June 22, 1914, for consideration of legal methods and procedures in the control of biologic products. June 16, 1914.

Surgeon Dunlop Moore. Granted 1 month's leave of absence from July 21, 1914. June 22, 1914.

Surgeon J. Goldberger. Directed to proceed, at such times as may be necessary, to Savannah, Ga., Spartanburg, S. C., and other points in the Southern States to organize and supervise the pellagra studies. June 16, 1914.

Surgeon M. K. Gwyn. Granted 30 days' leave of absence, on account of sickness, from June 14, 1914. June 16, 1914.

Passed Assistant Surgeon E. A. Sweet. Relieved from duty at the Gulf Quarantine Station and directed to proceed to the Mobile Quarantine Station and assume temporary charge. June 19, 1914.

Assistant Surgeon G. A. Kempf. Granted 21 days' leave of absence from June 29, 1914. June 19, 1914.

Assistant Surgeon J. B. Laughlin. Relieved from duty in charge of the Mobile Quarantine Station, and directed to proceed to New Albany, Miss., and report to Surgeon L. L. Lumsden for duty in field investigations. June 19, 1914.

Professor E. B. Phelps. Directed to proceed to Cincinnati, Ohio, and such other places on the Ohio River watershed as may be necessary, for conference in regard to the investigations of the pollution of the Ohio River now being carried on. June 16, 1914.

Acting Assistant Surgeon L. E. Werry. Granted 4 days' leave of absence from June 4 1914. June 3, 1914.

Pharmacist E. M. Holt. Directed upon completion of temporary duty at the New Orleans Quarantine Station to return to station at the Marine Hospital, Savannah, Ga. June 23, 1914.

List of Changes of Duties and Stations of Commissioned and Other Officers of the United States Public Health Service, for the seven days ended July 23, 1914.

Assistant Surgeon-General W. C. Rucker. Relieved from duty as member of a board of medical officers convened for the examination of candidates for appointment as assistant surgeons, on account of absence from the city. July 14, 1914.

Senior Surgeon Geo. W. Stoner. Directed to proceed to Ashbury Park N. J., for the purpose of making the annual physical examination of keepers and surfmen of the Life Saving Service. July 17, 1914.

Senior Surgeon F. Irwin. Directed to proceed to Tuckerton, N. J., July 20, 1914, and Atlantic City, N. J., July 23, 1914, for the purpose of making the annual physical examination of keepers and surfmen of the Life Saving Service. July 17, 1914.

Surgeon J. O. Cobb. Granted one days' leave of absence July 17, 1914, under paragraph 193, Regulations of the Service. July 14, 1914.

Surgeon E. K. Sprague. Granted 12 days' leave of absence from July 8, 1914. July 14, 1914.

Passed Assistant Surgeon A. D. Foster. Detailed as a member of the board of com-

missioned medical officers now in session at the Bureau for the examination of candidates for appointment as Assistant Surgeons in the Service, vice Assistant Surgeon R. A. Kearny, relieved. July 16, 1914.

Assistant Surgeon R. A. Kearny. Relieved from duty as recorder of a board of commissioned medical officers now in session at the Bureau, and directed to proceed to New Orleans, La., for duty in plague eradicative measures. July 16, 1914.

Assistant Surgeon W. F. Draper. Directed to proceed to Ocean City, Md., Chincoteague, Wachapreague, and Cape Charles, Va., for the purpose of making the annual physical examination of keepers and surfmen of the Life Saving Service. July 17, 1914.

BOARD CONVENED.

Board of medical officers convened to meet at the Revenue-Cutter Academy, New London, Conn., July 17, 1914, for the physical examination of four cadet engineers to ascertain their fitness for promotion to third lieutenants of engineers.

Detail for the Board:

Assistant Surgeon J. H. Smith, Jr., Chairman.

Acting Assistant Surgeon J. G. Stanton, Recorder. July 13, 1914.

Official: RUPERT BLUE.
Surgeon-General.

List of Changes of Duties and Stations of Commissioned and Other Officers of the United States Public Health Service, for the seven days ended July 15, 1914:—

Assistant Surgeon-General J. W. Kerr. Detailed to make an inspection of the Service operations for the prevention of trachoma in the mountains of Kentucky, with regard to present status of the work and with recommendations as to continuance or extension; also to inspect Service operations in connection with investigations of tuberculosis in relation to industries in Cincinnati, Ohio, and the investigations of the pollution of the Ohio River. July 10, 1914.

Surgeon L. L. Williams. Directed to make an inspection of the medical examination of arriving aliens along the Canadian border from Buffalo, N. Y., to Victoria, B. C., in order to establish uniformity in the medical examination and use of instruments of precision in the diagnosis of diseases. July 14, 1914.

Surgeon T. Clark. Detailed to attend the Second Biennial Conference of Health Officers of the State of Wisconsin, at Madison, July 16-17, 1914, for the purpose of presenting a paper on the prevention and treatment of trachoma. July 13, 1914.

Surgeon L. P. H. Bahrenburg. Directed to proceed to San Angelo, Texas, for the purpose of investigating suspected case of bubonic plague. July 10, 1914.

Passed Assistant Surgeon W. H. Frost. Authorized to instruct Sanitary Engineer H. W. Streeter to proceed to such places on the Ohio River watershed as may be necessary to make investigations and collect data. July 10, 1914.

Passed Assistant Surgeon E. H. Mullan. Granted 2 weeks' leave of absence from Aug. 3, 1914. July 11, 1914.

Passed Assistant Surgeon H. E. Hasseltine. Directed to proceed to Richmond, Va., on request of the State Commissioner of Health, to investigate suspected case of typhus fever. July 14, 1914.

Assistant Surgeon C. V. Akin. Relieved from duty at the Marine Hospital, New Orleans, La., and directed to report to the medical officer in charge of the work for duty in the eradication of plague infection. July 10, 1914.

Official: A. H. GLENNAN,
Acting Surgeon-General.

A. PH. A. MEMBERSHIPS.

The Highland Park College of Des Moines, Iowa, is now offering the following prizes of nominations to membership in the A. Ph. A.:

The Kagy Prize.—A membership in the American Pharmaceutical Association is offered by Dean E. O. Kagy to the student doing the best work in compounding and dispensing.

The Parker Prize.—A membership in the American Pharmaceutical Association is offered by Dr. R. L. Parker to the student doing the best work in Materia Medica and Pharmacognosy.

The Chittick Prize.—Prof. J. R. Chittick offers a membership in the American Pharmaceutical Association to the student doing the best work in Organic Chemistry.

The Waterbury Prize.—A membership in the American Pharmaceutical Association is offered by Mr. E. W. Waterbury to the student doing the best work in Manufacturing Pharmacy.

American Pharmaceutical Association

Organized: Philadelphia, 1852. **Incorporated: Washington, D. C., 1888.**

OFFICIAL ROSTER FOR 1913-1914.*

GENERAL OFFICERS.

President—GEORGE M. BERINGER.....501 Federal St., Camden, N. J.
Honorary President—ALBERT B. LYONS.....102 Alger Ave., Detroit, Mich.
First Vice President—FRANKLIN M. APPLE.....31st and Berks Sts., Philadelphia, Pa.
Second Vice President—W. S. RICHARDSON.....316, 4½ St. S. W., Washington, D. C.
Third Vice President—L. D. HAVENHILL.....1539 Vermont St., Lawrence, Kans.
General Secretary and Editor of the Journal—JAMES H. BEAL.....Scio, Ohio
Treasurer—HENRY M. WHELPLEY.....2342 Albion Place, St. Louis, Mo.
Reporter on the Progress of Pharmacy—C. LEWIS DIEHL.....932 Cherokee Road, Louisville, Ky.
Local Secretary—LEONARD A. SELTZER.....32 Adams St., W., Detroit, Mich.

Acting General Secretary and Acting Editor of the Journal—ERNEST C. MARSHALL, 63 Clinton Bldg., Columbus, Ohio

OFFICERS ELECT FOR 1914-1915.

(To be installed at the 62d Annual Convention)

President—CASWELL A. MAYO.....New York
First Vice President—L. D. HAVENHILL.....Lawrence, Kan.
Second Vice President—C. HERBERT PACKARD.....East Boston, Mass.
Third Vice President—CHARLES GIETNER.....St. Louis
Members of the Council, 1914-15—OTTO F. CLAUS.....St. Louis
M. I. WILBERT.....Washington, D. C.
WM. B. DAY.....Chicago

OFFICERS OF THE COUNCIL.

Chairman—EUGENE G. EBERLE.....1804 Jackson Street, Dallas, Tex.
Vice Chairman—JOHN G. GODDING.....278 Dartmouth St., Boston, Mass.
Secretary—JOSEPH W. ENGLAND.....415 North Thirty-third St., Philadelphia, Pa.

MEMBERS OF THE COUNCIL.

(Elected by the Association.)

E. G. EBERLE, Dallas, Tex.....Term expires 1914
GEORGE F. PAYNE, Atlanta, Ga.....Term expires 1914
JAMES M. GOOD, St. Louis, Mo.....Term expires 1914
WILLIAM C. ALPERS, Cleveland, Ohio.....Term expires 1915
FABIUS C. GODBOLD, New Orleans, La.....Term expires 1915
LUCIUS E. SAYRE, Lawrence, Kans.....Term expires 1915
CHARLES CASPARI, JR., Baltimore, Md.....Term expires 1916
CHARLES E. CASPARI, St. Louis.....Term expires 1916
JOHN G. GODDING, Boston.....Term expires 1916

(Elected by Local Branches.)

LEWIS C. HOPP, Northern Ohio Branch, Cleveland, Ohio.....
JOHN R. THOMAS, Baltimore Branch, Baltimore.....
WM. R. WHITE, Nashville Branch, Nashville, Tenn.....
J. A. KOCH, Pittsburg Branch, Pittsburg, Pa.....Term expires 1914
PHILIP ASHER, New Orleans Branch, New Orleans, La.....Term expires 1914
JOHN A. MARTIN, Denver Branch, Denver, Colo.....Term expires 1914
HENRY B. FLOYD, City of Washington Branch, Washington, D. C.....Term expires 1914
THOMAS D. MCELHENIE, New York Branch, New York, N. Y.....Term expires 1915
ALBERT H. CLARK, Chicago Branch, Chicago, Ill.....Term expires 1915
WILLIAM K. ILHARDT, St. Louis Branch, St. Louis, Mo.....Term expires 1915
FRANCIS E. STEWART, Philadelphia Branch, Philadelphia, Pa.....Term expires 1915
F. J. WULLING, Northwestern Branch, Minneapolis.....Term expires 1917
E. H. LAPIERRE, New England Branch, Cambridge, Mass.....Term expires 1916
C. T. P. FENNEL, Cincinnati Branch, Cincinnati, Ohio.....Term expires 1916
ALBERT SCHNEIDER, San Francisco Branch.....Term expires 1917
GEORGE B. KAUFFMAN, Columbus Branch.....Term expires 1917

(Members of the Council Ex-Officio.)

The President, Vice Presidents, General Secretary, Treasurer, Reporter on the Progress of Pharmacy, Secretary of the Council, Local Secretary, Historian, and the Chairmen of the Sections.

* Please notify the Acting General Secretary of any errors or omissions discovered.

HOUSE OF DELEGATES.

Chairman—CLYDE M. SNOW.....74 E. 12th St., Chicago, Ill.
First Vice Chairman—W. S. RICHARDSON.....316, 4½ St., S. W., Washington, D. C
Second Vice Chairman—LINWOOD A. BROWN.....425 Transylvania Park, Lexington, Ky.
Secretary—R. A. KUEVER.....College of Pharmacy, Iowa City, Iowa

BOARD OF CANVASSERS.

JULIUS A. KOCH, *Chairman*.....Pittsburgh, Pa.
PETER G. WALTER.....Pittsburgh, Pa.
LOUIS SAALBACH.....Pittsburgh, Pa.
LOUIS EMANUEL.....Pittsburgh, Pa.
FRED J. BLUMENSCHEIN.....Pittsburgh, Pa.

OFFICERS OF THE SECTIONS.

(Elected by the Several Sections.)

COMMERCIAL INTERESTS.

Chairman—HARRY B. MASON.....P. O. Box No. 484, Detroit, Mich.
Secretary—G. W. STEVENS.....170 Michigan Ave., Detroit, Mich.
Associates—L. A. SELTZER.....32 Adams St., W., Detroit, Mich.
Associates—J. W. PEYTON.....500 Texas St., Shreveport, La.

EDUCATION AND LEGISLATION.

Chairman—HUGH CRAIG.....122 So. Michigan Boulevard, Chicago
Secretary—FRANK H. FREERICKS.....1215 Mercantile Library Bldg., Cincinnati, O.
Associates—CLARISSA M. ROEHR.....2d and Parnassus Ave., U. H., San Francisco, Cal.
Associates—ERNEST C. MARSHALL.....Columbus, O.
Associates—R. A. KUEVER.....College of Pharmacy, Iowa City, Iowa

HISTORICAL INTERESTS.

Chairman—WILLIAM C. ALPERS.....14th St. and Central Ave., Cleveland, O.
Secretary—FREDERICK T. GORDON.....2115 Medary Ave., Philadelphia, Pa.
Historian—CASWELL A. MAYO.....62 West Broadway, New York

PRACTICAL PHARMACY AND DISPENSING.

Chairman—FERDINAND W. NITARDY.....1418 Cherokee St., Denver, Colorado
Secretary—CORNELIUS OSSEWARD.....Cobb Bldg., 4th and University Sts., Seattle, Wash.
Associate—IRWIN A. BECKER.....Care Michael Reese Hospital, Chicago, Ill.

PHARMACOPOEIAS AND FORMULARIES.

Chairman—E. FULLERTON COOK.....145 N. Tenth St., Philadelphia, Pa.
Secretary—R. H. NEEDHAM.....1311 Harrington Ave., Ft. Worth, Texas
Associates—BERNARD C. FANTUS.....719 Ashland Blvd., Chicago, Ill.
Associates—WILLIAM R. WHITE.....311 Grace Ave., Nashville, Tenn.
Associates—JOSEPH ROSIN.....9th and Parrish Sts., Philadelphia, Pa.

SCIENTIFIC.

Chairman—EDSEL A. RUDDIMAN.....101 24th Avenue, Nashville, Tenn.
First Vice Chairman—HERMANN ENGELHARDT.....2910 Garrison Ave., Baltimore, Md.
Second Vice Chairman—CHARLES E. CASPARI.....2108 Locust St., St. Louis, Mo.
Secretary—WILBUR L. SCOVILLE.....81 Melbourne Ave., Detroit, Mich.

GENERAL COMMITTEES.

(Appointed by the President.)

DRUG REFORM.

L. E. SAYRE, *Chairman*.....Lawrence, Kan. ALBERT SCHNEIDER.....San Francisco, Cal.
E. N. GATHERCOAL.....Chicago, Ill.

EBERT PRIZE.

(Appointed by the Chairman of the Scientific Section.)

EMERSON R. MILLER, *Chairman*.....Madison, Wis. ALBERT J. AYRES.....Hannibal, Mo.
BENJ. L. MURRAY.....Rahway, N. J.

EDITING RULES.

CASWELL A. MAYO, *Chairman*.....New York, N. Y. HARRY B. MASON.....Detroit, Mich.
EZRA J. KENNEDY.....New York, N. Y. HUGO KANTROWITZ.....New York, N. Y
J. H. BEAL.....Scio, O.

INTERNATIONAL COMMITTEE ON PHARMACEUTICAL NOMENCLATURE.

CASWELL A. MAYO, *Chairman*.....New York, N. Y. H. M. WHELPLEY.....St. Louis, Mo.
JOSEPH P. REMINGTON.....Philadelphia, Pa. G. M. BERINGER.....Camden, N. J.
E. O. ENGSTROM.....Pittsfield, Mass.

INTERNATIONAL CONGRESS OF PHARMACY.

JOSEPH P. REMINGTON, *Chairman*..Philadelphia, Pa. ALBERT SCHNEIDER.....San Francisco, Cal
EUGENE G. EBERLE.....Dallas, Tex.

NATIONAL LEGISLATION.

JOHN C. WALLACE, *Chairman*.....New Castle, Pa. FRED. A. HUBBARD.....Newton, Mass.
JAMES H. BEAL.....Scio, O. SAMUEL L. HILTON.....Washington, D. C.
CHARLES HOLZHAUER.....Newark, N. J.

ORGANIZATION OF LOCAL BRANCHES.

HUGH CRAIG, *Chairman*.....Chicago, Ill. FRANKLIN M. APPLE.....Philadelphia, Pa.
WILLIAM R. WHITE.....Nashville, Tenn. HENRY B. FLOYD.....Washington, D. C.
E. F. KELLY.....Baltimore, Md.

PATENTS AND TRADE MARKS.

F. E. STEWART, *Chairman*.....Philadelphia, Pa. W. BODEMANN.....Chicago, Ill.
S. L. HILTON.....Washington, D. C. FRANK H. FREERICKS.....Cincinnati, O.
J. W. ENGLAND.....Philadelphia, Pa.

PHARMACEUTICAL SYLLABUS.

HARRY B. MASON, P. O. Box 484, Detroit, Mich.....Term expires 1914
GEORGE M. BERINGER, 501 Federal St., Camden, N. J.....Term expires 1915
WILLIAM B. DAY, Michigan Boulevard and Twelfth St., Chicago, Ill.....Term expires 1916
WILLIS G. GREGORY, 530 Main St., Buffalo, N. Y.....Term expires 1917
HENRY L. TAYLOR, 2 Woodlawn Ave., New York, N. Y.....Term expires 1918
CHARLES CASPARI, JR., 6 E. Franklin St., Baltimore, Md.....Term expires 1919
E. G. EBERLE, 1804 Jackson St., Dallas, Tex.....Term expires 1920

PHYSIOLOGICAL TESTING.

E. M. HOUGHTON, M. D., *Chairman*...Detroit, Mich. WILLIAM A. PEARSON.....Philadelphia, Pa.
CHARLES R. ECKLES.....Indianapolis, Ind. WILLIAM WORTH HALE.....Washington, D. C.
PAUL S. PITTENGER.....Philadelphia, Pa.

PROPRIETARY MEDICINES.

THOMAS F. MAIN, 166 Chambers St., New York, N. Y.....Term expires 1914
JAMES H. BEAL, Scio, Ohio.....Term expires 1915
MARTIN I. WILBERT, 25th and E Streets, N. W., Washington, D. C.....Term expires 1916
JOHN C. WALLACE, 113 E. Washington St., New Castle, Penna.....Term expires 1917
CHAS. CASPARI, JR., Maryland College of Pharmacy, Baltimore, Md.....Term expires 1918

QUALITY OF MEDICINAL PRODUCTS.

(Appointed by the Chairman of the Scientific Section.)

EDGAR L. PATCH, *Chairman*.....Stoneham, Mass.
WILBUR L. SCOVILLE.....Detroit, Mich.
LYMAN F. KEBLER.....Washington, D. C.
HENRY H. RUSBY.....Newark, N. J.

RECIPE BOOK.

HENRY P. HYNSON, *Chairman*.....Baltimore, Md.
OTTO RAUBENHEIMER.....Brooklyn, N. Y.
MARTIN I. WILBERT.....Washington, D. C.
THEO. D. WETTERSTROEM.....Cincinnati, O.
PHILIP UTECH.....Meadville, Pa.
WILLIAM L. CLIFFE.....Philadelphia, Pa.
CHARLES F. NIXON.....Leominster, Mass.

REGULATIONS FOR THE TRANSPORTATION OF DRUGS BY MAIL.

(Special Committee of the Section on Education and Legislation.)

CASWELL A. MAYO, *Chairman*.....New York, N. Y.
BENJ. L. MURRAY.....Rahway, N. J.
HENRY P. HYNSON.....Baltimore, Md.
JAMES H. BEAL.....Scio, Ohio
JOHN C. WALLACE.....New Castle, Pa.

REVISION OF THE CONSTITUTION AND BY-LAWS.

J. W. ENGLAND, *Chairman*.....Philadelphia, Pa.
H. M. WHELPLEY.....St. Louis, Mo.
J. C. WALLACE.....New Castle, Pa.
J. H. BEAL.....Scio, O.
G. M. BERINGER.....Camden, N. J.

STATUS OF PHARMACISTS IN THE GOVERNMENT SERVICE.

WILLIAM B. DAY, *Chairman*.....Chicago, Ill.
WILLIAM C. ANDERSON.....Brooklyn, N. Y.
FRED T. GORDON.....Philadelphia, Pa.
SAMUEL L. HILTON.....Washington, D. C.
CASWELL A. MAYO.....Brooklyn, N. Y.

TIME AND PLACE, NEXT MEETING.

THOMAS F. MAIN, *Chairman*.....New York, N. Y.
ALBERT SCHNEIDER.....San Francisco, Cal.
ROBERT H. WALKER.....Gonzales, Tex.
GEORGE B. KAUFFMAN.....Columbus, O.
CHARLES H. PACKARD.....Boston, Mass.

UNITED STATES PHARMACOPOEIA.

A. B. LYONS, Detroit, Mich.....Term expires 1914
WILLIAM MITTELBACH, Boonville, Mo.....Term expires 1915
REID HUNT, Boston, Mass.....Term expires 1916
L. D. HAVENHILL, *Chairman*, Lawrence, Kan.....Term expires 1917
L. F. KEBLER, Washington, D. C.....Term expires 1918
H. A. SEIL, Perth Amboy, N. J.....Term expires 1919
E. FULLERTON COOK, Philadelphia, Pa.....Term expires 1920
E. H. LAPIERRE, Cambridge, Mass.....Term expires 1921
H. A. B. DUNNING, Baltimore, Md.....Term expires 1922
HERMANN ENGELHARDT, Baltimore, Md.....Term expires 1923

WEIGHTS AND MEASURES.

HARRY V. ARNY, *Chairman*.....New York, N. Y.
CHARLES W. JOHNSON.....Seattle, Wash.
GEORGE D. TIMMONS.....Valparaiso, Ind.
PHILIP ASHER.....New Orleans, La.
CLYDE M. SNOW.....Chicago, Ill.

WILLIAM PROCTOR MEMORIAL FUND.

J. F. HANCOCK, *Chairman*.....Baltimore, Md.
CHARLES CASPARI, JR.....Baltimore, Md.
A. R. L. DOHME.....Baltimore, Md.
B. F. FAIRCHILD.....New York, N. Y.
CASWELL A. MAYO.....New York, N. Y.
E. G. EBERLE.....Dallas, Tex.
J. L. LENGFELD.....San Francisco, Cal.
C. M. FORD.....Cambridge, Mass.
CLEMENT B. LOWE.....Philadelphia, Pa.
HENRY KRAEMER.....Philadelphia, Pa.
F. G. RYAN.....Detroit, Mich.
THOMAS F. MAIN.....New York, N. Y.
PARKER C. COOK.....Baltimore, Md.
J. K. LILLY.....Indianapolis, Ind.
H. S. WELLCOME.....London, Eng.
GEORGE MERRELL.....Cincinnati, O.
JOSE P. ALACAN.....Havana, Cuba
E. L. PATCH.....Stoneham, Mass.
LEWIS C. HOPP.....Cleveland, O.
JAMES E. HANCOCK.....Baltimore, Md.

MEMBERSHIP.

Chairman—C. HERBERT PACKARD.....7 Central Square, E. Boston, Mass.

Vice-Chairmen—JOHN G. GODDING, FRANKLIN M. APPLE, WILLIAM B. DAY, JAMES O. BURGE, HENRY M. WHELPLEY, ALBERT SCHNEIDER, CORNELIUS OSSEWARD, CHARLES F. HEEBNER.

District Sub-Committee No. 1—Including Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island.

Vice-Chairman—JOHN G. GODDING.....278 Dartmouth St., Boston, Mass.

Maine—MARTIN L. PORTER, Danforth.
ALFRED P. COOK, Portland.
JOHN COUGHLIN, Augusta.
CHARLES H. DAVIS, Bangor.
ALBERT W. MESERVE, Kennebunk.

New Hampshire—EUGENE H. RICE, Nashua.
WILLIAM D. GRACE, Portsmouth.
EARL H. LYFORD, Berlin.
GEORGE H. KNOWLTON, Manchester.

Vermont—HENRY A. SLADE, Montpelier.
WM. H. ZOTTMAN, Burlington.
ELBRIDGE W. GILMAN, Marshfield.
WILFRED F. ROOT, Brattleboro.
LUCIEN J. TRUDEL, Rutland.

Massachusetts—THEODORE J. BRADLEY, Boston.
ERNEST C. MARSHALL, Columbus, Ohio.
CHARLES F. NIXON, Leominster.
WILLIAM S. BRIRY, Melrose.
ERNST O. ENGSTROM, Pittsfield.

Connecticut—CLARENCE G. SPALDING, New Haven.
LEVI WILCOX, Waterbury.
CURTIS P. GLADDING, Hartford.
GEORGE A. JAMIESON, Bridgeport.

Rhode Island—CHARLES A. GILBERT, Providence.
WM. O. BLANDING, Providence.
JOHN W. WOOD, Newport.

District Sub-Committee No. 2—Including New York, Pennsylvania, New Jersey, Delaware, Maryland, Virginia, West Virginia and District of Columbia.

Vice-Chairman—FRANKLIN M. APPLE.....31st and Berks Sts., Philadelphia, Pa.

New York—JACOB L. LASCOFF, New York.
LOUIS BERGER, New York.
OTTO RAUBENHEIMER, Brooklyn.
FREDERICK P. TUTHILL, Brooklyn.
EDWARD S. DAWSON, JR., Syracuse.
ALFRED B. HUESTED, Delmar.
GEORGE REIMANN, Buffalo.
BYRON M. HYDER, Rochester, N. Y.

Pennsylvania—LUCIUS L. WALTON, Williamsport.
WM. L. CLIFFE, Philadelphia.
JOSEPH W. ENGLAND, Philadelphia.
LOUIS SAALBACH, Pittsburgh.
PHILIP H. UTECH, Meadville.
CHARLES F. KRAMER, Harrisburg.
CHARLES L. HAY, Du Bois.
WILLIAM O. FRAILEY, Lancaster.
PAUL B. ANSPACH, Easton.

New Jersey—DAVID STRAUSS, Newark.
CHARLES HOLZHAUER, Newark.
EDGAR R. SPARKS, Burlington.
HENRY A. JORDEN, Bridgeton.
FRANK C. STUTZLEN, Elizabeth.

Delaware—HERBERT K. WATSON, Wilmington.
REUBEN M. KAUFMAN, Seaford.

Maryland—EVANDER F. KELLY, Baltimore.
HENRY A. B. DUNNING, Baltimore.
MILBOURNE A. TOULSON, Chestertown.
CHARLES HOLTZMAN, Cumberland.
JACOB H. KELLER, Frederick.

Virginia—T. ASHBY MILLER, Richmond.
CHARLES B. FLEET, Lynchburg.
THOMAS R. TAYLOR, Norfolk.
THOMAS F. KNOCK, Petersburg.
CHARLES D. FOX, Roanoke.

West Virginia—WALTER E. DITTMEYER, Harper's Ferry.
JOHN COLEMAN, Wheeling.
GEORGE O. YOUNG, Buckhannon.
FRANK B. HAYMAKER, Clarksburg.
WALTER C. PRICE, Charleston.

Dist. of Col.—SAMUEL L. HILTON, Washington.
MARTIN I. WILBERT, Washington.
LOUIS FLEMER, Washington.

District Sub-Committee No. 3—Including Ohio, Indiana, Illinois, Kentucky, Michigan, Wisconsin.

Vice-Chairman—WILLIAM B. DAY.....Michigan Blvd. and 12th St., Chicago, Ill.

Ohio—THEODORE D. WETTERSTROEM, Cincinnati.
LEWIS C. HOPP, Cleveland.
CHARLES S. ASHBROOK, Mansfield.
WALDO M. BOWMAN, Toledo.
EDWARD SPEASE, Columbus.

Indiana—FREDERICK W. MEISSNER, JR., La Porte.
MAURICE P. SCHWARTZ, Indianapolis.
CHARLES B. JORDON, Lafayette.
EMIL REYER, South Bend.

Illinois—HENRY C. CHRISTENSEN, Chicago.
ALBERT H. CLARK, Chicago.
WILHELM BODEMANN, Chicago.
PAUL G. SCHUH, Cairo.
GEORGE W. SOHRBECK, Moline.
FRITZ LUEDER, Peoria.
FREDERICK D. G. WALKER, Rock Island.

Kentucky—CHILTON S. PORTER, Lexington.
JOHN W. GAYLE, Frankfort.
GEORGE EISELE, Louisville.
JOSEPH B. WELSH, Paducah.
EDWARD L. PIECK, Covington.

Michigan—HARRY B. MASON, Detroit.
LEONARD A. SELTZER, Detroit.
MARTIN H. GOODALE, Battle Creek.
WILLIAM C. KIRCHGESSNER, Grand Rapids.
HENRY HEIM, Saginaw.
FERN L. SHANNON, Lansing.

Wisconsin—SOLLMAN A. ECKSTEIN, Milwaukee.
EDWARD S. HEBBARD, La Crosse.
EDWARD WILLIAMS, Madison.
GUSTAV A. KRADWELL, Racine.
WILLIAM W. ALBERS, Wausau.

District Sub-Committee No. 4—Including North Carolina, South Carolina, Tennessee, Georgia, Alabama, Mississippi, Florida, Arkansas, Louisiana, Oklahoma, Texas, West Indies.

Vice-Chairman—JAMES O. BURGE.....1502 McGavock St., Nashville, Tenn.

North Carolina—EDWARD V. HOWELL, Chapel Hill.
JOHN E. F. HICKS, Goldsboro.
EDWARD V. ZOELLER, Tarboro.
JOHN H. HARDIN, Wilmington.
CHARLES P. GREYER, Morganstown.
K. E. BENNETT, Bryson City.

South Carolina—GEORGE W. EVANS, Anderson.
JOSEPH B. HYDE, Charleston.

Tennessee—WILLIAM R. WHITE, Nashville.
IRA B. CLARK, Nashville.
THOMAS J. SHANNON, Sharon.
FRANCIS W. WARD, Memphis.
JOSEPH F. VOIGHT, Chattanooga.
DAVID A. ROSENTHAL, Knoxville.

Georgia—WM. S. ELKIN, JR., Atlanta.
MAX MORRIS, Macon.
EDWIN M. HOLT, Savannah.
ROBERT H. LAND, JR., Augusta.
ROBERT THOMAS, JR., Thomasville.

Alabama—WILLIAM E. BINGHAM, Tuscaloosa.
BERNHARD H. EICHOLD, Mobile.
WILLIAM P. THOMASON, Guntersville.
EMERSON R. MILLER, Auburn.
LAWRENCE L. LEWIS, Tuskegee.

Mississippi—HENRY M. FAZER, University.
GUS C. KENDALL, Meriden.
CARL STIER, Biloxi.

Florida—ERNEST BERGER, Tampa.
DAVID W. RAMSAUR, Palatka.
WILLIAM D. JONES, Jacksonville.
MACON THORNTON, Ormond.
ARTHUR M. HENRY, Tallahassee.

Arkansas—MARTIN A. EISLE, Hot Springs.
FRANCIS G. SCHACHLEITER, Hot Springs.
LATTA K. SNODGRASS, Little Rock.
WILLIAM L. DEWOODY, Pine Bluff.
JAMES M. SPARKS, Fort Smith.

Louisiana—PHILIP ASHER, New Orleans.
FABIUS C. GODBOLD, New Orleans.
ADAM WIRTH, New Orleans.
E. L. MCCLUNG, Natchitoches.

Texas—EUGENE G. EBERLE, Dallas.
HUGH C. JACKSON, Austin.
JOHN C. BUCKNER, Galveston.
ROBERT H. NEEDHAM, Fort Worth.
HERMAN A. NESTER, San Antonio.

Oklahoma—CHARLES A. DOW, Pond Creek.
EDWIN DEBARR, Norman.
FORESS B. LILLIE, Guthrie.

Cuba—JOSE GUILLERMO DIAZ, Havana.
JOSE RAMON R. GARCIA, Havana.
FRANCISCO HERRERA, Havana.
MANUEL R. GATELL, Cienfuegos.

Porto Rico—FRED C. BAUM, San Juan.
RAFAEL M. MENDEZ, Lares.

District Sub-Committee No. 5—Including Missouri, Iowa, Kansas, Nebraska, Minnesota, North Dakota, South Dakota.

Vice-Chairman—HENRY M. WHELPLEY.....2342 Albion Place, St. Louis, Mo

Missouri—JEROME A. WILKERSON, St. Louis.
HENRY O. A. HUEGEL, St. Louis.
WILLIAM MITTELBACH, Booneville.
ADOLPH BRANDENBERGER, Jefferson City.
DAVID V. WHITNEY, Kansas City.
OTIS W. SMITH, Sedalia.
ALBERT J. AYRES, Hannibal.

Iowa—WILBER J. TEETERS, Iowa City.
GUSTAV SCHERLUNG, Sioux City.
CARL A. BERNER, Des Moines.
ELBERT O. KAGY, Des Moines.
GEORGE L. PARSONS, Keokuk.
JOHN M. LINDLY, Winfield.

Kansas—L. D. HAVENHILL, Lawrence.
DAVID V. RIESEN, Marysville.
MATHIAS NOLL, Atchison.
JOHN S. CHISM, Wichita.
MAXIMILIAN W. FRIEDENBURG, Winfield.

Nebraska—AUTUMN V. PEASE, Fairbury.
CHARLES R. SHERMAN, Omaha.
EDMUND O. HASCHENBURGER, Lincoln.
HERBERT LOCK, Central City.

Minnesota—FREDERICK A. KLENERT, Minneapolis.
TRUMAN GRIFFEN, Minneapolis.
CHARLES T. HELLER, St. Paul.
CHARLES R. NOYES, St. Paul.
WM. A. ABBETT, Duluth.
ROBERT L. MORLAND, Worthington.

North Dakota—WILLIAM S. PARKER, Lisbon.
BURT FINNEY, Bismarck.
WILLIAM P. PORTERFIELD, Fargo.
HENRY L. HAUSSAMEN, Grafton.
WM. L. BROMME, Minot.

South Dakota—EDWARD C. BENT, Dell Rapids.
FRANK D. KRIERS, Beresford.
GEORGE F. SWARTZ, Redfield.
LYMAN F. DUNNING, Sioux Falls.
DAVID F. JONES, Watertown.

District Sub-Committee No. 6—Including California, Nevada, Utah, Arizona, Colorado, New Mexico, Pacific Islands.

Vice-Chairman—ALBERT SCHNEIDER.....723 Pacific Bldg., San Francisco, Cal.

California—JOSEPH L. LENGFELD, San Francisco.
KENNETH B. BOWERMAN, San Francisco.
GEORGE H. P. LICHTHARDT, Sacramento.
ROBERT C. REILLY, Los Angeles.
ROBERT A. LEET, Oakland.

Nevada—JOSEPH M. TABER, Elko.

Utah—
CHARLES VAN DYKE, Salt Lake City.
JOHN CULLEY, Ogden.

Arizona—HARRY BRISLEY, Prescott.

Colorado—FERDINAND W. NITARDY, Denver.
CHARLES J. CLAYTON, Denver.
EDWIN G. FINE, Boulder.
FRANK E. MORTENSON, Pueblo.
CHARLES D. BARNES, Glenwood Springs.

New Mexico—BERNARD C. RUPPE, Albuquerque.
ADOLPH J. FISCHER, Santa Fe.
FRANK A. SOUTHARD, Fort Stanton.

Philippine Islands—ARTHUR NEVILLE, Zamboanga.
FREDERICK R. WILLIAMS, Manila.
GEORGE H. PAUL, Mindanao.

Hawaiian Islands—FRANK L. GIBSON, Kalawao, Molakar.
CHRISTOPHER HERMANN, Honolulu.

District Sub-Committee No. 7—Including Washington, Oregon, Idaho, Montana, Wyoming, Alaska.

Vice-Chairman—CORNELIUS OSSEWARD.....Cobb Bldg., Seattle, Wash.

Washington—ALBERT H. DEWEY, Seattle.
JOSEPH R. WATSON, Seattle.
ASA FRANK MAXWELL, Pullman.
NICK G. KENT, Tacoma.
ERIC P. TRUEDSON, Puyallup.

Oregon—JOHN M. A. LAUE, Portland.
LOUIS G. CLARKE Portland.
KITTIE W. HARBORD, Salem.
GEORGE C. BLAKELEY, The Dalles.
JAMES L. BROWN, Marshfield.

Idaho—CLARENCE O. BALLOU, Boise.
JAMES R. ELISON, Buhl.
HOWARD M. SKEELS, Twin Falls.

Montana—CHARLES E. F. MOLLETT, Missoula.
HOWARD ROCKEFELLER, Butte.
WILLIAM L. BROMME, Glasgow.

Wyoming—LESTER R. TYSON, Cheyenne.
NEIL J. BJORK, Sheridan.

Alaska—GUY L. SMITH, Douglas.
FLOYD E. RYUS, Ketchikan.

District Sub-Committee No. 8—British America.

Vice-Chairman—CHARLES F. HEEBNER.....Ontario College Pharmacy, Toronto, Ontario, Canada

ALEXANDER B. MOORE, Montreal.

HENRY E. J. BLETCHER, Winnipeg, Province of Manitoba, Canada.

ALEXANDER STEWART, Guelph, Province of Ontario, Canada.

M. V. PADDOCK, St. John, Province of New Brunswick, Canada.

FRANCIS C. SIMSON, Halifax, Province of Nova Scotia, Canada.

SPECIAL SUB-COMMITTEES.

Boards of Pharmacy.

ERNEST BERGER.....Tampa, Fla.
HARRY L. MEREDITH.....Hagerstown, Md.
WILLIAM H. RUDDER.....Salem, Ind.
ROBERT H. WALKER.....Gonzales, Tex.
FRED C. DODDS.....Springfield, Ill.

Faculties of Pharmacy Schools.

HENRY KRAEMER.....Philadelphia, Pa.
EDSEL A. RUDDIMAN.....Nashville, Tenn.
CLYDE M. SNOW.....Chicago, Ill.
CHARLES W. JOHNSON.....Seattle, Wash.
HARRY V. ARNY.....New York, N. Y.

Food and Drug Chemists.

LINWOOD A. BROWN.....Lexington, Ky.
CHARLES CASPARI, JR.....Baltimore, Md.
LYMAN F. KEBLER.....Washington, D. C.
CHARLES H. LAWALL.....Philadelphia, Pa.
R. B. FITZ-RANDOLPH.....Trenton, N. J.

Pharmacists in U. S. Government Service.

ALBERT M. ROEHRIG.....Buffalo, N. Y.
FRED T. GORDON.....Philadelphia, Pa.
JOSEPH F. PEARSON.....Annapolis, Md.
EDGAR T. HITCH.....Manila, P. I.
JOHN F. NEWPORT.....Takoma Park, D. C.
JOHN BAIGENT.....Columbus, O.
H. W. REISS.....Texas City, Texas.

Wholesale Druggists and Manufacturers.

ALFRED R. L. DOHME.....Baltimore, Md.
FRANK G. RYAN.....Detroit, Mich.
HENRY K. MULFORD.....Philadelphia, Pa.
ALBERT PLAUT.....New York, N. Y.
ANDREW J. MARTIN.....Nashville, Tenn.

Women Members.

MISS ANNA G. BAGLEY.....Columbus, O.
MRS. JOHN G. GODDING.....Boston, Mass.
MRS. JOHN C. WALLACE.....New Castle, Pa.
MISS MARY L. CREIGHTON.....Scio, O.
MRS. M. M. GRAY.....Chicago, Ill.
MISS ZADA M. COOPER.....Iowa City, Ia.
MISS ALICE HENKEL.....Washington, D. C.
MISS CLARISSA M. ROEHR.....San Francisco, Cal.
MISS KITTIE W. HARBORD.....Salem, Ore.

DELEGATES

N. W. D. A., 1913.

JAMES H. BEAL, *Chairman*.....Scio, O.
HENRY M. WHELPLEY.....St. Louis, Mo.
WILLIAM A. HOVER.....Denver, Col.
ADOLPH W. MILLER.....Philadelphia, Pa.
WILLIAM R. WHITE.....Nashville, Tenn.

A. M. A. SECTION ON PHARMACOLOGY, 1914.

JOSEPH P. REMINGTON, *Chairman*..Philadelphia, Pa.
HENRY H. RUSBY.....Newark, N. J.
HENRY M. WHELPLEY.....St. Louis, Mo.
JAMES H. BEAL.....Scio, O.
REID HUNT.....Boston, Mass.
MARTIN I. WILBERT.....Washington, D. C.
OTTO RAUBENHEIMER.....Brooklyn, N. Y.
LINWOOD A. BROWN.....Lexington, Ky.
WILLIAM B. DAY.....Chicago, Ill.
ELIE H. LAPIERRE.....Cambridge, Mass.

NATIONAL DRUG TRADE CONFERENCE.

JOHN C. WALLACE, *Chairman*.....New Castle, Pa.
SAMUEL L. HILTON.....Washington, D. C.
JAMES H. BEAL.....Scio, O.

N. A. R. D., 1914.

WILLIAM C. ANDERSON, *Chairman*..Brooklyn, N. Y.
LEWIS C. HOPP.....Cleveland, O.
W. BODEMANN.....Hyde Park, Chicago

THE NATIONAL FEDERATION OF RETAIL MERCHANTS, 1914.

FRANK H. FREERICKS, *Chairman*.....Cincinnati, O.
HENRY M. WHELPLEY.....St. Louis, Mo.
WILLIAM K. ILHARDT.....St. Louis, Mo.
JAMES H. BEAL.....Scio, O.

NATIONAL ASSOCIATION OF MANUFACTURERS OF MEDICINAL PRODUCTS.

JAMES H. BEAL, *Chairman*.....Scio, O.
ALBERT PLAUT.....New York, N. Y.
JOSEPH P. REMINGTON.....Philadelphia, Pa.

COMMITTEES OF THE COUNCIL.

(Elected by the Council.)

AUDITING.

OTTO F. CLAUS, *Chairman*.....St. Louis
FRANK C. PAULEY.....St. Louis.
F. W. SULTAN.....St. Louis

CENTENNIAL FUND.

JOHN G. GODDING.....Boston
J. A. KOCH.....Pittsburgh.
JAMES H. BEAL.....Scio, Ohio

FINANCE.

J. A. KOCH, *Chairman*.....Pittsburgh
E. H. LAPIERRE.....Cambridge, Mass.
OTTO F. CLAUS.....St. Louis

INVESTED AND TRUST FUNDS.

JAMES H. BEAL, *Chairman*.....Scio, Ohio
E. G. EBERLE.....Dallas, Tex.
CHARLES HOLZHAUER.....Newark, N. J.
H. M. WHELPLEY, *ex-officio*.....St. Louis

PUBLICATION.

J. W. ENGLAND, *Chairman*.....Philadelphia
GEO. M. BERINGER.....Camden, N. J.
E. FULLERTON COOK.....Philadelphia
E. G. EBERLE.....Dallas, Tex.
F. J. WULLING.....Minneapolis, Minn.

Ex-officio Members—THE EDITOR, REPORTER ON THE PROGRESS OF PHARMACY, AND THE TREASURER.

NATIONAL FORMULARY.

C. LEWIS DIEHL, *Chairman*.....Louisville, Ky.
CLYDE M. SNOW.....Chicago, Ill.
A. B. STEVENS.....Ann Arbor, Mich.
OTTO RAUBENHEIMER.....Brooklyn, N. Y.
LEONARD A. SELTZER.....Detroit, Mich.
HARRY V. ARNY.....New York
E. FULLERTON COOK.....Philadelphia, Pa.
H. A. B. DUNNING.....Baltimore, Md.
SAMUEL L. HILTON.....Washington, D. C.
CHAS. H. LA WALL.....Philadelphia, Pa.
GEO. M. BERINGER.....Camden, N. J.
M. I. WILBERT.....Washington, D. C.
W. L. SCOVILLE.....Detroit, Mich.
WILLIAM A. HALL.....Detroit, Mich.
ADAM WIRTH.....New Orleans, La.

TRANSPORTATION.

THOS. F. MAIN, *Chairman*.....New York, N. Y.
W. BODEMANN.....Chicago, Ill.
WM. C. ALPERS.....Cleveland, Ohio
H. M. WHELPLEY.....St. Louis, Mo.
CHAS. G. MERRELL.....Cincinnati, Ohio
J. O. BURGE.....Nashville, Tenn.
CHAS. CASPARI, JR.....Baltimore, Md.
FRED I. LACKENBACH.....San Francisco, Cal.
L. A. SELTZER.....Detroit, Mich.
E. FLOYD ALLEN.....Minneapolis, Minn.
F. C. GODBOLD.....New Orleans, La.
W. S. ELKINS, JR.....Atlanta, Ga.
C. HERBERT PACKARD.....East Boston, Mass.
LEWIS C. HOPP.....Cleveland, Ohio
S. L. BRESLER.....Denver, Colo.

The General Secretary and Local Secretary, *ex-officio*.

UNOFFICIAL STANDARDS.

GEORGE M. BERINGER (*Chairman*), 501 Federal Street, Camden, N. J.....Term expires 1914
H. H. RUSBY, 776 DeGraw Avenue, Newark, N. J.....Term expires 1914
F. R. ELDRED, 3325 Kenwood Avenue, Indianapolis.....Term expires 1914
JOHN M. FRANCIS, 240 Seyburn Avenue, Detroit.....Term expires 1914
ELMER E. WYCKOFF, 246 E. 5th St., Brooklyn, N. Y.....Term expires 1915
J. A. KOCH, Bluff and Pride Streets, Pittsburgh.....Term expires 1915
L. D. HAVENHILL, Lawrence, Kan.....Term expires 1915
E. L. NEWCOMB, College of Pharmacy, University of Minneapolis, Minneapolis.....Term expires 1915
HENRY KRAEMER, 424 South 44th Street, Philadelphia.....Term expires 1916
EUSTACE H. GANE, 91 Fulton Street, New York.....Term expires 1915
B. L. MURRAY, Care Merck & Co., New York.....Term expires 1916
W. A. PUCKNER, 535 Dearborn Avenue, Chicago.....Term expires 1916
JOHN G. ROBERTS, 35 Poplar St., Philadelphia, Pa.....Term expires 1917
OTTO RAUBENHEIMER, 1341 Fulton Street, Brooklyn.....Term expires 1917
GEORGE D. ROSENGARTEN, P. O. Box 1625, Philadelphia.....Term expires 1917
M. I. WILBERT, 1621 35th St., N. W., Washington, D. C.....Term expires 1917

ORGANIZATION OF LOCAL BRANCHES, 1913-1914.

(The General Secretary should have prompt notice of corrections and changes.)

BALTIMORE.

President—E. F. KELLY. *Vice President*—W. M. FOUCH.
Secretary-Treasurer—E. W. HODSON.

Committee Chairmen.

Membership—H. A. B. DUNNING. *Science and Practice*—H. P. HYNSON.
Professional Relations—J. F. HANCOCK. *Education and Legislation*—J. E. HANCOCK.

CINCINNATI.

President—E. H. THIESING. *Treasurer*—JULIUS GREYER.
First Vice President—FRED W. WEISSMANN. *Secretary*—CHARLES A. APMEYER.
Second Vice President—J. F. KUTCHBAUGH.

Executive Committee—3 years—CHARLES T. P. FENNEL.
2 years—CHARLES G. MERRELL.
1 year—A. O. ZWICK.

CHICAGO.

President—J. H. WELLS. *Second Vice President*—WILLIAM GRAY.
First Vice President—W. B. DAY. *Third Vice President*—MAURICE MINER.
Secretary-Treasurer—E. N. GATHERCOAL.

Committee Chairmen.

Practical Pharmacy—J. A. BECKER. *Publicity*—L. E. WARREN.
Medical Relations—BERNARD FANTUS. *Legislation*—H. C. CHRISTENSEN.
Council Representative—A. H. CLARK.

COLUMBUS.

President—GEORGE B. TOPPING, Ph. C. *Secretary*—EDWARD SPEASE, Ph. C.
Vice-President—EDWIN N. WEBB. *Treasurer*—ERNEST C. MARSHALL, Ph. G.
Council Representative—PROF. GEORGE B. KAUFFMAN

DENVER.

***President*—W. A. HOVER.** ***Second Vice President*—F. J. LORD.**
First Vice President—C. H. SKINNER. ***Secretary-Treasurer*—F. W. NITARDY.**

Committee Chairmen.

Membership—L. L. ALKIRE. *Library*—F. W. NITARDY.
Program—S. L. BRESLER. *Fraternal Relations*—A. W. CLARK.
Education—PROF JAMES SEYMOUR. *Permanent Quarters*—C. J. CLAYTON.
Qualifications of Registered Pharmacists—A. W. CLARK.

JACKSONVILLE.

President—R. W. BENNETT. *Recording Secretary*—S. O. GRIFFIN.
Vice President—SAM. DUNLAP. *Treasurer*—W. D. JONES.

NASHVILLE.

***President*—J. O. BURGE.** ***Second Vice President*—D. J. KUHN.**
***First Vice President*—E. A. RUDDIMAN.** ***Treasurer*—C. C. YOUNG.**
Secretary—WILLIAM R. WHITE.

Committee Chairmen.

***Membership*—C. C. YOUNG.** ***Legislation*—IRA B. CLARK.**
***Trade Interests*—M. E. HUTTON.** *National Formulary*—R. L. EVES.

NEW ENGLAND.

President—F. A. HUBBARD. *Vice President*—F. W. ARCHER.
***Secretary-Treasurer*—R. ALBRO NEWTON.**

Committee Chairmen.

***Professional Relations*—FRANK F. ERNST.** ***Membership*—WILLIAM H. GLOVER.**

NEW YORK.

President—DR. H. V. ARNY. *Vice President*—JOHN ROEMER.
Treasurer—DR. JOSEPH WEINSTEIN. *Secretary*—F. L. MCCARTNEY.

Committee Chairmen.

Progress of Pharmacy—GEO. C. DIEKMAN. *Professional Relations*—LOUIS BERGER.
Education and Legislation—W. C. ANDERSON. *Membership*—J. H. REHFUSS.

NORTHERN OHIO.

***President*—L. C. HOPP.** ***Vice President*—W. T. HANKEY.**
Secretary-Treasurer—T. BERNARD TANNER.

NORTHWESTERN.

President—A. D. THOMPSON.
Vice President—TRUMAN GRIFFIN.
***Secretary-Treasurer*—EDWIN L. NEWCOMB.**

Executive Committee: A. J. KLINE. F. M. PARKER. W. S. SMETANA. F. A. U. SMITH.

PHILADELPHIA.

President—PROF. E. FULLERTON COOK. *Second Vice President*—PROF. J. W. STURMER.
First Vice President—SAMUEL C. HENRY. *Secretary*—DR. R. P. FISCHELIS.
Treasurer—THEODORE CAMPBELL.

Committee on Practical Pharmacy.

CHAS. H. LAWALL, *Chairman.* W. W. MCNEARY. A. HUNSBERGER.

Committee on Professional Relations.

W. L. CLIFFE. F. M. APPLE. DR. F. E. STEWART.

Committee on Membership.

WILLIAM E. LEE. A. J. STANDT, *Chairman.* QUINTUS HOCH.

PHILADELPHIA.

(Scientific Section.)

President—C. H. KIMBERLY. *Secretary*—F. P. STROUP.

PITTSBURGH BRANCH.

President—ANDREW CAMPBELL. *Third Vice President*—LEONARD K. DARBAKER.
First Vice President—CHAS. E. WILLETS. *Secretary*—B. E. PRITCHARD.
Second Vice President—PETER G. WALTER. *Treasurer*—P. HENRY UTECH.

Committee Chairmen.

Membership—J. S. O'BRIEN. *Medical Relations*—GEORGE W. KUTSCHER.
Practice—W. H. MCDONALD. *Education and Legislation*—JOHN C. WALLACE.
Publicity—B. E. PRITCHARD.

SAN FRANCISCO.

President—DR. ALBERT SCHNEIDER. *Second Vice President*—ARTHUR REUM.
First Vice President—JENNIE M. WHITE. *Secretary-Treasurer*—CLARISSA M. ROEHR.
Council Member—DR. ALBERT SCHNEIDER.

ST. LOUIS.

President—J. A. WILKERSON. *Second Vice President*—O. J. CLOUGHLY.
First Vice President—A. C. SCHUELTE, JR. *Secretary*—JULIUS C. HOESTER.
Treasurer—J. W. MACKELDEN.

Advisory Board—N. EMORY WILLIAMS, FRANCIS HEMM, FREDERICK SULTAN.

WASHINGTON, D. C.

President—W. S. RICHARDSON. *Second Vice President*—HENRY E. KALUSOWSKI.
First Vice President—DR. RODNEY H. TRONE. *Secretary and Council Member*—HENRY B. FLOYD
Treasurer—WYMOND H. BRADBURY.

Committee Chairmen.

Membership—HERBERT C. EASTERDAY. *Medical Relations*—LEWIS FLEMER.
Legislation—WILLARD S. RICHARDSON. *Scientific Communications*—RODNEY H. TRUE.
Publicity—J. LEYDEN WHITE.

OFFICERS FOR WOMEN'S SECTION.

President—MRS. JOHN G. GODDING. *Second Vice President*—MRS M. M. GRAY.
First Vice President—MRS. JOHN C. WALLACE. *Third Vice President*—MISS CLARISSA M. ROEHR.
Secretary—MISS ANNA G. BAGLEY. *Treasurer*—MRS. H. M. WHELPLEY.
Historian—MRS. JOHN CULLEY.

Executive Committee.

MRS. O. F. CLAUS, 3513 Herbert St., St. Louis, Mo. MRS. J. O. BURGE, 1502 McGavock St., Nashville, Tenn.

MISS ZADA M. COOPER, 124 Bloomington St., Iowa City, Iowa

Membership Committee.

MRS. M. M. GRAY, 4151 Gladys Avenue, Chicago, Ill. MISS ALICE HENKEL, Connecticut Ave., Chevy Chase, Md.
MISS KITTIE W. HARBORD, 280 N. Commercial St., Salem, Ore. MRS. JOHN C. WALLACE, 113 Washington St., Newcastle, Pa.
The Secretary Ex-Officio.

Outlook Committee.

MISS CHARLOTTE I. DUBOIS, 379 Main St., Catskill N. Y. MRS. W. B. DAY, 6532 Woodlawn Ave., Chicago, Ill.
MRS. R. H. MCKENZIE, 1707 Lawrence St., Denver, Colo. MRS. J. W. ENGLAND, 415 W. 33rd St., Philadelphia, Pa.
MISS MARY L. CREIGHTON, Scio, Ohio. MRS. C. A. STOVER, 1360 Massachusetts Ave., Cambridge, Mass.

MRS. W. C. ANDERSON, 315 Greene Ave., Brooklyn, N. Y.

Press Committee.

MRS. JOHN CULLEY, 2579 Monroe Ave., Ogden, Utah. MRS. F. R. ELDRED, 3325 Kenwood Ave., Indianapolis, Ind.
MRS. GEO. M. BERINGER, 501 Federal St., Camden, N. J. MRS. R. L. THOMPSON, 1718 Broadway, Nashville, Tenn.
MRS. J. H. BEAL, Scio, Ohio. MRS. FLETCHER HOWARD, 401 S. Grand Ave., Zelda Apt., Los Angeles, Calif.

MRS. CHAS. HOLZHAUER, 987 Broad St., Newark, N. J.

OFFICERS OF ALLIED ASSOCIATIONS.

NATIONAL WHOLESALE DRUGGISTS' ASSOCIATION.

President—GEORGE W. LATTIMER, Columbus.
First Vice President—F. C. GROOVER.
Second Vice President—CHARLES F. MICHAELS.
Third Vice President—CHARLES E. POTTS.
Fourth Vice President—C. S. LITTELL.
Fifth Vice President—G. S. FLEECE.
Secretary—JOSEPH E. TOMS, New York, N. Y.
Treasurer—SAMUEL E. STRONG, Cleveland, O.
Board of Control—CHARLES GIBSON, *Chairman*, JAMES W. MORRISON, GEORGE R. MERRELL, MR. BEDWELL, JOHN T. KENNEDY.
General Representative—F. E. HOLLIDAY.

AMERICAN CONFERENCE OF PHARMACEUTICAL FACULTIES.

ALBERT SCHNEIDER, *President*
University of California.
WILBER J. TEETERS, Secretary-Treasurer
University of Iowa.
JULIUS A. KOCH, *Chairman Executive Committee*
University of Pittsburg.

NATIONAL ASSOCIATION BOARDS OF PHARMACY.

E. BERGER, *President*
Tampa, Fla.

M. G. BEEBE, *First Vice-President*
Burlington, Vt.
JOHN CULLEY, *Second Vice-President*
Ogden, Utah.
J. J. CAMPBELL, *Third Vice-President*
Pigeon, Mich.
A. F. SALA, *Secretary*
Winchester, Indiana
F. W. WARD, *Treasurer*.....Memphis, Tenn.

COMMITTEES

Advisory Committee

H. C. CHRISTENSEN, *Chairman*.....3 years
CHAS. GEITNER .....2 years
E. L. BRANDIS.....1 year

Constitution and By-Laws

E. BERGER, *Chairman*.....Tampa, Fla.
T. A. MILLER.....Richmond, Va.
I. W. CLEMENTS.....Marengo, Iowa

Executive

C. E. ZINN, *Chairman* 1914.....Kansas City, Mo.
J. C. BURTON, 1915.....Stroud, Okla.
L. C. LEWIS, 1916.....Tuskegee, Ala.
A. F. SALA.....Ex-Officio
E. Berger.....Ex-Officio

Syllabus

C. O. BIGELOW, 6 years.....New York City
WM. MITTLEBACH, 3 years.....Boonville, Mo.
W. H. RUDDER, 5 years.....Salem, Ind.
CHARLES GEITNER, 2 years.....St. Louis
E. O. ENGSTROM, 4 years.....Pittsfield, Mass.
JOHN CULLEY, 1 year.....Ogden, Utah

Legislative

W. J. PORTERFIELD.....Fargo, N. D.
WM. S. FLINT.....Worcester, Mass.
JOHN D. HUMPHRIES.....Bristow, Oklahoma

Publicity

H. L. MEREDITH, *Chairman*
Hagerstown, Md.

H. E EATON.....Shenandoah, Iowa
H. E. RICE.....Nashua, N. H.
J. B. CLARK.....Nashville, Tenn.
T. M. STARRH.....Idaho Falls, Idaho

Active Members

Alabama	Georgia	Kentucky	Missouri	Tennessee	Wisconsin
Arkansas	Idaho	Louisiana	Nebraska	Texas	
Arizona	Illinois	Maine	New Mexico	Utah	
Connecticut	Indiana	Maryland	North Dakota	Vermont	
Delaware	Iowa	Massachusetts	Oklahoma	Virginia	
Florida	Kansas	Michigan	South Dakota	West Virginia	

Associate Members

Colorado	Minnesota	North Carolina	Wyoming	New York	Pennsylvania

THE NATIONAL ASSOCIATION OF RETAIL DRUGGISTS.

Officers 1913-1914

President.....JAMES F. FINNERAN, Boston, Mass.
1st V.-President, SOL A. ECKSTEIN, Milwaukee, Wis.
2nd V.-President, J. G. SCHNUERER, Cleveland, O.
3rd V.-President...ROBT. J. FRICK, Louisville, Ky.
Treasurer.....GRANT W. STEVENS, Detroit, Mich.
Secretary.....THOS. H. POTTS, Chicago, Ill.

Executive Committee

CHAS. H. HUHN, *Chairman*.....Minneapolis, Minn.
H. B. GUILFORD.....Rochester, N. Y.
H. C. SHUPTRINE.....Savannah, Ga.
SAMUEL C. HENRY.....Philadelphia, Pa.
M. A. STOUT.....Bluffton, Ind.
JAMES P. CROWLEY.....Chicago, Ill.

Department Heads

HUGH CRAIG, Publicity.
OTTO E. BRUDER, U. S. P. and N. F. Propaganda.
N. F. BENNEWITZ, Acounts.

DIRECTORY OF STATE ASSOCIATIONS.*

ALABAMA.

President—D. P. MCDAIRMID.....Talledega *Secretary*—W. E. BINGHAM.....Tuscaloosa

ARIZONA.

President—JOHN H. BARNETT.....Mesa *Secretary*—T. E. THORPE.....Prescott

ARKANSAS.

President—ROY CHAMBERLAIN.....Malvern *Secretary*—MISS MARY A. FEIN.....Little Rock

CALIFORNIA.

President—FRANK T. GREEN.....San Francisco *Secretary*—K. B. BOWERMAN.....San Francisco

COLORADO.

President—H. B. SECHEVERELL.....Denver *Secretary*—CHAS. J. CLAYTON.....Denver

CONNECTICUT.

President—H. E. PURDY.....Derby *Secretary*—P. J. GARVIN.....Bethel

DELAWARE.

President—GEO. W. RHOADES...New Castle County *Secretary*—WALTER A. MORGAN.....Wilmington

DISTRICT OF COLUMBIA.

President—F. T. STONE.....Washington *Secretary*—C. J. FUHRMANN.....Washington

FLORIDA.

President—M. M. TAYLOR.....Tampa *Second Vice President*—E. M. NORTON, Jacksonville
First Vice President—W. J. MALLOY, White Springs *Third Vice President*—F. D. BRYAN.....Lakeland
Secretary—J. H. HAUGHTON.....*Palatka*

GEORGIA.

President—W. A. PIGMAN.....Savannah *Secretary*—T. A. CHEATHAM.....Macon

IDAHO.

President—B. B. DAVIS.....Emmett *Secretary*—DONALD S. WHITEHEAD.....Boise

---

* Notice of corrections or changes should be sent to ERNEST C. MARSHALL, Clinton Building, Columbus, O.

ILLINOIS.

President—W. F. BAUM.....Danville *Secretary*—W. B. DAY.....Chicago

INDIANA.

President—ERNEST W. STAHLHUTH.....Columbus *Secretary*—WILLIAM F. WERNER.....Indianapolis

IOWA.

President—A. J. KILMER.....Mason City *Secretary*—AL. FALKENHAINER.....Algona

KANSAS.

President—WALTER J. BANGS.....Madisón *Secretary*—D. VON RIESEN.....Marysville

KENTUCKY.

President—LEON EVANS.....Mayfield *Secretary*—J. W. GAYLE.....Frankfort

LOUISIANA.

President—JOHN GILL WAFER.....Homer *Secretary*—GEORGE W. MCDUFF.....New Orleans

MAINE.

President—W. H. WOOD.....Sanford *Secretary*—M. L. PORTER, M. D.....Danforth

MARYLAND.

President—J. F. LEARY.....Rock Hall *Secretary*—E. FRANK KELLY.....Baltimore

MASSACHUSETTS.

President—F. J. CAMPBELL.....Lowell *Secretary*—J. F. GUERIN.....Worcester

MICHIGAN. Meets at Detroit, Week of August 24, 1914.

President—D. G. LOOK.....Lowell *Secretary*—V. W. FURNISS.....Nashville

MINNESOTA.

President—MAX MENZELL.....Pipestone *Secretary*—DR. E. L. NEWCOMB.....Minneapolis

MISSISSIPPI.

President—J. C. MCGEE.....Jackson *Secretary*—FLORA SCARBOROUGH.....Laurel

MISSOURI

President—O. J. CLOUGHLY.....St. Louis *Secretary*—H. M. WHELPLEY.....St. Louis

MONTANA

President—C. F. CHAPPLE.....Billings *Secretary*—J. A. RIEDELL.....Boulder

NEBRASKA.

President—WM. BROOKLEY.....Edgar *Secretary*—J. G. MCBRIDE.....University Place

NEVADA

President—S. J. HODGKINSON.....Reno *Secretary*—H. J. DUNCAN.....Reno

NEW HAMPSHIRE.

President—P. H. BOIRE.....Manchester *Secretary*—EUGENE SULLIVAN.....Concord

NEW JERSEY.

President—JOHN C. GALLAGHER.....Jersey City *Secretary*—FRANK C. STUTZLEN.....Elizabeth

NEW MEXICO.

President—B. RUPPE.....Albuquerque *Secretary*—MRS. M. L. POWELL.....Albuquerque

NEW YORK.

President—A. S. WARDLE.....Hudson *Secretary*—EDWARD S. DAWSON.....Syracuse

NORTH CAROLINA.

President—G. C. GOODMAN.....Mooresville *Secretary*—J. G. BEARD.....Chapel Hill

NORTH DAKOTA.

President—HARRY IVERSON.....Egeland *Secretary*—W. S. PARKER.....Lisbon

OHIO.

President—W. H. BOWMAN.....Toledo *Secretary*—THEO. D. WETTERSTROEM.....Cincinnati

OKLAHOMA.

President—W. S. YOUNKMAN.....Tulsa *Secretary*—A. W. WOODMANCY.....Oklahoma City

OREGON

President—FRANK H. CALDWELL *Secretary*—A. W. ALLEN.....Portland

PENNSYLVANIA.

President—EDGAR F. HEFFNER.....Lock Haven *Secretary*—DAVID J. REESE.....*Philadelphia*

RHODE ISLAND.

President—GEO. T. ARMSTRONG.....Providence *Secretary*—CLARENCE BOWMER.....Providence

SOUTH CAROLINA.

President—O. F. HART.....Columbia *Secretary*—F. M. SMITH.....Charleston

SOUTH DAKOTA.

President—H. J. SCHNAIDT.....Parkston *Secretary*—E. C. BENT.....Dell Rapids

TENNESSEE.

President—T. A. ROBINSON.....Memphis *Secretary*—T. J. SHANNON.....Sharon

TEXAS.

President—W. D. ADAMS.....Forney *Secretary*—E. G. EBERLE.....Dallas

UTAH

President—A. R. MCINTYRE.....Ogden *Secretary*—CHAS. VAN DYKE.....Salt Lake City

VERMONT.

President—A. B. ANDERSON.....Montpelier *Secretary*—W. E. TERRILL.....Montpelier

VIRGINIA.

President—G. D. OWENS.....Wytheville *Secretary*—E. L. BRANDIS.....Richmond

WASHINGTON.

President—G. H. BARTELL.....Seattle *Secretary*—D. C. BARTLEY.....Seattle

WEST VIRGINIA.

President—JOHN R. ELSON.....Wellsburg *Secretary*—B. E. DOWNS.....Welch

WISCONSIN.

President—G. H. KESTEN.....Milwaukee *Secretary*—E. B. HEINSTREET.....Palmyra

WYOMING No Association.

DIRECTORY OF STATE BOARDS OF PHARMACY*

ALABAMA.

W. P. THOMASON, *President*.....Guntersville
EDWARD P. GALT, *Secretary*.....Selma
SAMUEL A. WILLIAMS, *Treasurer*.....Troy
L. C. LEWIS.....Tuskegee
W. E. BINGHAM.....Tuscaloosa

Meets at Montgomery, Oct. 14, 1914.

ARIZONA.

FRED FLEISCHMAN, *President*.....Tucson
J. A. DINES, *Vice-President*.....Tempe
ARTHUR G. HULETT, *Secretary*.....Phoenix
T. E. MCCUTCHEON.....Yuma
W. E. MALTAR.....Flagstaff
GEORGE MARTIN.....Tucson

Meets at Phoenix on the second Wednesday of April and November each year. Special meetings are held from time to time for examination of a class.

ARKANSAS.

J. B. BOND, *President*.....Little Rock
S. J. MCMAHON, *Vice-President*.....Batesville
J. A. GIBSON, *Secretary*.....Little Rock
FRANK SCHACHLEITER.....Hot Springs
R. A. WARREN.....Dermottack

CALIFORNIA.

J. O. MCKOWN, *President*.....Livermore
LOUIS ZEH, *Secretary*.....San Francisco
H. O. BUKER.....Fresno
E. T. OFF.....Pasadena
GEO. M. SUTHERLAND.....Alameda
H. J. FINGER.....Santa Barbara
C. B. WHILDEN.....Alameda

Meets in San Francisco and Los Angeles during months of January, April, July and October.

COLORADO.

D. Y. BUTCHER.....Colorado Springs
W. F. THEBUS.....Denver
F. E. MORTENSON.....Pueblo

CONNECTICUT.

CURTIS P. GLADDING, *President*.....Hartford
JAMES P. WOOD, *Vice-President*.....New Haven
JNO. A. LEVERTY, *Secretary and Treas.*.Bridgeport

Meets in January, April, July and October. Special meetings February, March, May, June, November and December.

DELAWARE.

REUBEN M. KAUFMAN, *President*.....Seaford
JOHN O. BOSLEY, *Sec'y and Treas.*.....Wilmington
NORMAN C. DOWNS.....Wilmington
WALTER R. KEYS.....Clayton
THOMAS H. CAPPEAU.....Wilmington

Meets at Newark the first Wednesday in January, April, July and October.

DISTRICT OF COLUMBIA.

AUGUSTUS C. TAYLOR, *President*
W. T. KERFOOT, *Secretary.*
CHAS. J. FUHRMAN, *Treasurer.*
F. T. HAFELFINGER.
H. W. KENNER.

FLORIDA.

E. BERGER, *President*.....Tampa
H. H. D'ALEMBERTE, *Vice-President*.....Pensacola
D. W. RAMSAUR, *Sec. and Treas.*.....Palatka
LEON HALE.....Tampa
W. D. JONES.....Jacksonville

Meets semi-annually in January and June.

GEORGIA.

C. D. JORDAN, *Secretary*.....Monticello
S. E. BAYNE.....Macon
W. S. ELKIN.....Atlanta
B. S. PERSONS.....Macon
W. L. MEADOWS.....Columbus

HAWAII.

F. F. HEDMAN, M. D.....Honolulu, Oahu
S. S. PECK.....Honolulu, Oahu
ALEXIS J. GIGNOUX, *Secretary*.....Honolulu, Oahu

Meets at irregular intervals whenever there are any applicants to be examined.

IDAHO.

C. O. BALLOU, *President*.....Boise
J. J. PULSE, *Vice President*.....Grangeville
T. M. STARRH.....Twin Falls

Examination meetings are held on the third Wednesday of January, April, September and November.

ILLINOIS.

FREDERIC T. PROVOST, *President*.....Chicago
LEO L. MRAZEK, *Vice President*.....Chicago
FRANK J. BUTLER.....Pontiac
THOMAS D. GREGG.....Harrisburg
J. B. MICHELS.....El Paso
F. C. DODDS, *Secretary*.....Springfield

Meetings at Chicago, April, July, September and November. At Springfield, in May and October.

INDIANA.

A. F. HEINEMAN, *President*.....Valparaiso
BURTON CASSADY, *Secretary*.....West Terre Haute
W. H. RUDDER.....Salem
W. H. FOGAS.....Mt. Vernon
J. J. KEENE.....Indianapolis

IOWA.

DAVID E. HADDEN, *President*.....Alta
HARRY E. EATON, *Sec'y and Treas.*.....Des Moines
GEORGE D. NEWCOMB.....Creston
A. C. WILSON.....Oelwein

KANSAS.

W. S. HENRION, *President*.....Wichita
W. E. SHERIFF, *Secretary*.....Ellsworth
M. W. FREIDENBURG, *Treasurer*.....Winfield
W. S. DICK.....Lawrence
J. G. BUNCH.....Beloit

KENTUCKY.

ROBIN H. WHITE, *President*.....Mt. Sterling
J. G. GILBERT, *Treasurer*.....Paducah
J. ORVILLE PATTERSON.....Hawesville
JAMES H. MARTIN.....Winchester
ADDISON DIMMITT.....Louisville
J. W. GAYLE, *Secretary*.....Frankport

*Boards not listed are those which have failed to reply to our request for information.

LOUISIANA.

W. E. ALLEN, *President*.....Monroe
JOS. T. BALTAR, *Secretary-Treasurer*...New Orleans
E. L. MCCLUNG.....Natchitoches
EDW. H. WALSDORF.....New Orleans
GUS SEEMANN.....New Orleans
A. DI TRAPANI.....New Orleans
LUTER E. CARRUTH.
JOHN R. TAYLOR.

MAINE.

JAMES A. BROE, *President*.....Portland
FRANK T. CRANE, *Secretary*.....Machias
E. LESTER COWAN, *Treasurer*.....Rumford

Meets second Wednesday of February, April, August, October and December at State House, Augusta.

MARYLAND.

H. LIONEL MEREDITH, *President*.....Hagerstown
DAVID R. MILLARD, *Treasurer*.....Mt. Washington
EPHRAIM BACON, *Secretary*.....Baltimore
J. FULLER FRAMES.....Baltimore
WILLIAM C. POWELL.....Snow Hill

MASSACHUSETTS.

CHARLES F. RIPLEY, *President*.....Taunton
A. J. BRUNELLE, *Secretary*.....Fall River
W. S. FLINT.....Worcester
W. EDGAR MARTIN.....Holyoke
WILLIAM S. BRIRY.....Melrose

Meets at Boston, from January 1 to July 1, first three Tuesdays of each month for examination and fourth Tuesday for business.

MICHIGAN.

WILL E. COLLINS, *President*.....Owosso
EDWARD T. BODEN, *Secretary*.....Bay City
E. E. FAULKNER.....Delton
L. E. SELTZER.....Detroit
C. S. KOON.....Muskegon

MINNESOTA.

ARTHUR VON ROHR, *President*.....Winona
EDWARD A. TUPPER, *Secretary*.....Minneapolis
C. H. HUHN.....Minneapolis
GEO. H. GOODRICH.....Anoka
ROBERT L. MORLAND.....Worthington
HERMAN W. RIETZKE.....St. Paul

MISSISSIPPI.

H. M. FASER, *President*.....Oxford
W. W. ELLIS, *Secretary and Treasurer*..Fernwood
T. O. SLAUGHTER.....Waynesboro
P. J. FIFE.....Jackson
S. C. LINDSEY.....Emporia

Meets in Jackson the first Tuesday in April and October.

MISSOURI.

CHARLES GIETNER, *President*.....St. Louis
R. A. DOYLE, *Vice President*.....East Prairie
C. E. ZINN, *Secretary and Treasurer*..Kansas City
W. C. BENDER.....St. Joseph
E. G. COX.....Craig

MONTANA.

F. A. SCHEUBER, *President*.....Livingston
W. R. MONTGOMERY, *Secretary*.....Butte
EMIL STARZ, *Treasurer*.....Helena

Meets in April and October at Butte.

NEBRASKA.

D. J. KILLEN, *President*.....Beatrice
E. W. MCCONNELL, *First Vice President*...McCook
SAM'L EWING, *Second Vice President*.....Creston
J. EARLE HARPER, *Secretary*.....Clearwater
OREL JONES, *Treasurer*.....Oconton

Regular meeting dates are on the second Wednesdays of February, May, August and November. The places of meeting are not definite.

NEVADA.

N. E. WILSON, *President*.....Reno
J. M. TABER, *Secretary*.....Elko
W. A. BROWN.....Winnemucca
ROBERT L. PROUTY.....Tonopah
F. M. CLARK.....Ely

Meets first week in May and first week in November at Riverside Hotel, Reno.

NEW HAMPSHIRE.

EUGENE SULLIVAN, *President*.....Concord
HERBERT E. RICE, *Secretary*.....Nashua
PAUL H. BOIRE, *Auditor*.....Manchester

Meets at State House, Concord, every fourth Wednesday of month except July and August.

NEW JERSEY.

DAVID STRAUSS, *President*.....Newark
HENRY A. JORDEN, *Secretary*.....Bridgeton
LEWIS W. BROWN, *Treasurer*.....Englewood
BLOOMFIELD HULICK .....Asbury Park
FERDANAND A. BONGARTZ.....Jersey City

Meets at Trenton the third Thursdays in January, April, July and October.

NEW MEXICO.

E. G. MURPHY, *President*.....Las Vegas
G. S. MOORE.....Roswell
T. N. ZOOK.....Santa Fe
B. G. DYNE.....Las Cruces
B. RUPPE, *Secretary-Treasurer and Inspector*, Albuquerque

Meeting places and dates not fixed.

NEW YORK.

		Term expires
ALFRED B. HUESTED, *President*	Delmar	1915
J. LEON LASCOFF, *Vice President*	New York	1914
GEORGE C. DIEKMAN	New York	1916
THOMAS F. RAYMOW	Brooklyn	1916
JOHN R. WALL	New York	1914
BYRON M. HYDE	East Rochester	1916
WILLIS G. GREGORY	Buffalo	1915
WAYNE B. BISSELL	Syracuse	1915
JOHN HURLEY	Little Falls	1914
WARREN L. BRADT, *Secretary*	Albany	

NORTH CAROLINA.

		Term expires
E. V. ZOELLER, *President*	Tarboro	1917
F. W. HANCOCK, *Secretary*	Oxford	1914
W. W. HORNE	Fayetteville	1915
J. P. STOWE	Charlotte	1916
IRA W. ROSE	Rocky Mount	1918

NORTH DAKOTA.

H. L. HAUSMANN, *President*.....Grafton
W. S. PARKER, *Secretary and Treasurer*....Lisbon
W. P. PORTERFIELD.....Fargo
BURT FINNEY.....Bismarck
WALTER MASTER.....Willow City

Meets at Fargo, on the third Tuesday of March, June and October.

OHIO.

A. L. FLANDERMEYER, *President*.....Cleveland
C. O. HOFFMAN, *Vice President*.....Arcanum
F. H. KING, *Treasurer*.....Delphos
M. N. FORD, *Secretary*.....Columbus
EDWARD VOSS, JR.....Cincinnati
F. H. KING.....Delphos

Meets at Columbus on the second Monday of January and October and third Monday of June each year.

OKLAHOMA.

L. D. BRUNK, JR., *President*.....Nowata
J. C. BURTON, *Secretary*.....Stroud
J. D. HUMPHREY, *Treasurer*.....Bristow
H. S. SHACKELFORD
C. A. FRASER

Meets at Oklahoma City on the second Tuesday and Wednesday in the months of January, April, July and October.

OREGON.

J. LEE BROWN, *President*.....Marshfield
F. H. CALDWELL, *Secretary*.....Portland
L. B. HASKINS.....Medford
BLISS DARBY.....Glendale
F. S. WARD.....Salem

Meets in Portland on the second Tuesday in March, June, September and December.

PENNSYLVANIA.

LOUIS EMANUEL *President*.....Pittsburgh
LUCIUS L. WALTON, *Secretary*.....Williamsport
GEORGE D. STROH, *Treasurer*.....Pittston
CHARLES F. KRAMER.....Harrisburg
CHRISTOPHER KOCH.....Philadelphia

Meets at Harrisburg, March 1; Pittsburgh, June; Williamsport, August; Pittsburgh and Philadelphia, November.

PORTO RICO COUNCIL.

PEDRO JULIA, *President*.....San Juan
JOSE MONCLOVA, *Secretary*.....Rio Piedras
RAMON L. DAUBON, *Treasurer*.....San Juan
CLEMENTE RAMIREZ .....Manati
J. CALDERON APONTE.....Catano

RHODE ISLAND.

WILLIAM J. MCCAW, M. D., *President*.
HOWARD A. PEARCE, *Vice President*.
JAMES E. BRENNAN, *Secretary and Registrar*.
JAMES T. WRIGHT.
NICHOLAS F. REINER.
WILLIAM R. FORTIN.
MICHAEL H. CORRIGAN.

Meets the first Tuesday of each month except July, August and September.

SOUTH CAROLINA.

C. A. MILFORD, PH. G., *Chairman*.....Abbeville
T. P. YOUNG, PH. G.....Greenwood
J. M. OLIVER, M. D.....Orangeburg
J. G. DE LOWNE.....Sumter
L. P. FOUCHE.....Anderson
D. TILDEN RILEY.....Florence
FRANK M. SMITH, *Secretary*.....Charleston

SOUTH DAKOTA.

F. W. BROWN, *President*.....Lead
G. F. SCHWARTZ.....Redfield
F. W. HALBKAT.....Webster
E. C. BENT, *Secretary*.....Dell Rapids

TENNESSEE.

F. W. WARD, *President*.....Memphis
W. A. MCBATH, *Vice President*.....Knoxville
J. B. SAND.....Nashville
J. E. JUSTICE.....Clarksville
IRA B. CLARK, *Secretary and Treasurer*...Nashville
O. J. NANCE.....Jackson

TEXAS.

H. C. JACKSON, *President*.....Austin
R. H. WALKER, *Secretary*.....Gonzales
JOHN A. WEEK, *Treasurer*.....Ballinger
WALTER H. COUSINS.....Wichita Falls
H. V. SCHUMANN.....New Braunfels

Meets on the third Tuesdays of May, September and January at places to be appointed.

UTAH.

J. L. FRANKEN, *President*.....Salt Lake
JOHN CULLEY, *Vice President*.....Ogden
WALTER H. DAYTON, *Secretary*.....Salt Lake
ALEX HEDQUIST.....Provo
WYNN L. EDDY.....Brigham City

Meets every three months, usually the third Tuesday and Wednesday of the month.

VERMONT.

E. G. MCCLALLEN, *President*.....Rutland
MASON G. BEEBE, *Secretary*.....Burlington
W. L. GOKAY, *Treasurer*.....Bennington
W. F. ROOT.....Brattleboro
D. F. DAVIS.....Lyndonville

VIRGINIA.

H. S. ARRINGTON, *President*.....Norfolk
T. A. MILLER, *Secretary*.....Richmond
CLARENCE P. KEARFOOT.....Martinsville
W. L. LYLE.....Bedford
JOHN E. JACKSON.....Tazewell
H. R. MILLER, *General Counsel*.....Richmond
E. L. BRANDIS, *Field Secretary*.....Richmond

Meets at Richmond the third Tuesday of January, April, July and October.

WASHINGTON.

C. OSSEWARD, *President*.....Seattle
D. B. GARRISON, *Secretary and Treasurer*..Connell
V. T. MCCROSKEY.....Colfax
A. F. MAXWELL.....Pullman
F. D. MARR.....Tacoma

Meets in Seattle. Dates not fixed.

WEST VIRGINIA.

F. B. HAYMAKER, *President*.....Clarksburg
W. C. PRICE, *Vice President*.....Huntington
S. M. SCOTT, JR.....Terra Alta
B. E. DOWNS.....Welch
ALFRED WALKER, *Secretary*.....Sutton

WISCONSIN.

B. J. KREMER, *President*.....Fond du Lac
EDWARD WILLIAMS, *Secretary*.....Madison
H. G. RUENZEL.....Milwaukee
G. V. KRADWELL.....Racine

WYOMING.

GEORGE D. CURETON, *President*.....Lusk
R. A. HOPKINS, *Secretary*.....Cheyenne
N. B. BENNETT.....Sheridan